

# Bear Creek Wildlife Management Area Management Plan



September 11, 2018

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## Executive Summary

Bear Creek Wildlife Management Area (WMA) is in Madison County approximately 12 airline miles south-southeast of Ennis, MT and approximately 5 airline miles east of Cameron, MT. The WMA comprises 3,458 acres of diverse habitats across an elevation gradient, from grasslands and shrub-steppe mountain foothills to coniferous forest and alpine communities. It was purchased in the 1950s with the intent of providing secure elk winter range.

The primary goal for Bear Creek WMA is to provide habitat for a variety of wildlife including elk, mule deer, black bears, grizzly bears, mountain grouse, and non-game species along the face of the Madison Range. The secondary goal is to provide public opportunity for outdoor recreation, primarily for public hunting and wildlife-viewing. Bear Creek WMA provides important winter range for up to 1,000 elk and is also critical winter range for about 200-250 mule deer. Although it makes up only ~3% of the total mule deer survey area in the east-side Madison Valley, ~22% of mule deer counted are within or adjacent to Bear Creek WMA.

Bear Creek WMA is meeting its goals without need for substantial management manipulation. A popular destination for hunting, wildlife-watching, hiking, skiing, and other recreation, Bear Creek WMA is closed from December 1st through May 15th each year to protect wintering wildlife from disturbance. With annual weed control efforts, it maintains excellent forage for wintering wildlife and other species. Since its purchase, Bear Creek WMA has not had domestic livestock grazing. Large-scale forest management activities are precluded by access, as the forested sections of the WMA are landlocked by designated US Forest Service Wilderness. The forested sections are being used by elk as hiding cover. Future activities on Bear Creek WMA will include routine maintenance of boundary fences along its western border, annual weed control efforts, occasional signage needs, and road repair as necessary.

## Statewide Goal for WMAs

Montana's Wildlife Management Areas (WMAs) are lands managed by Montana Fish, Wildlife and Parks (MFWP) to benefit a diversity of wildlife species and their habitats on behalf of the public and provide compatible public access for fish and wildlife related recreation.

## Bear Creek WMA Goal

The primary goal of Bear Creek WMA is to provide habitat for a variety of wildlife including elk, mule deer, black bears, grizzly bears, mountain grouse, and non-game species along the face of the Madison Range. The secondary goal is to provide public opportunity for outdoor recreation, primarily for public hunting and wildlife-viewing.

## Description of WMA

Bear Creek WMA is in Madison County, approximately 12 airline miles south-southeast of Ennis, MT and approximately 5 airline miles east of Cameron, MT (Figure 1). The WMA comprises 3,458 acres. The elevation on the WMA ranges from a low of 6,000' by Burger Creek to a high of 9,652' at The Helmet. Bear Creek WMA is bordered by USFS to the east and by private lands to the west. MFWP holds conservation easements on 5,278 acres of private land adjacent to and near the WMA. Other nearby properties are under conservation easements with other entities, like the Montana Land Reliance.

Most of the WMA is stretched along the foothills of the Madison Mountain Range, where the forest meets the shrub steppe and grasslands, but two sections lie completely in the Lee Metcalf Wilderness area. Bear Creek WMA is considered one continuous management unit, but connection between sections is generally at corners in a checkerboard pattern. The portions of the WMA from Mill Creek to the North Fork of Bear Creek (Sections 15, 22, 27, and 35) are the grassland and shrub-steppe land with the best winter forage potential, whereas the portion between the North Fork of Bear Creek to the Trail Fork and The Helmet (Sections 1, 7, and 5) align with the forest and alpine systems which hold more snow and are less conducive to winter range (Figures 2 and 3). The WMA is approximately 14% grassland, 32% shrub-steppe, 49% coniferous forest, and 1% alpine areas. The WMA holds mostly-intact native plant communities and provides ideal winter range for elk and mule deer.

The nearest long-term weather station to Bear Creek WMA is in Ennis, Montana. Ennis receives an average 13 inches of precipitation annually, most of which falls between April and June. Ennis receives an average of 45 inches of snowfall per year. The average annual temperature is 43°F. The average high and low temperatures in July are 83°F and 45°F. The average high and low temperatures in January are 35°F and 14°F.

See Appendix A for more information about the purchase and history of Bear Creek WMA, as well as the 1964 Management Plan.



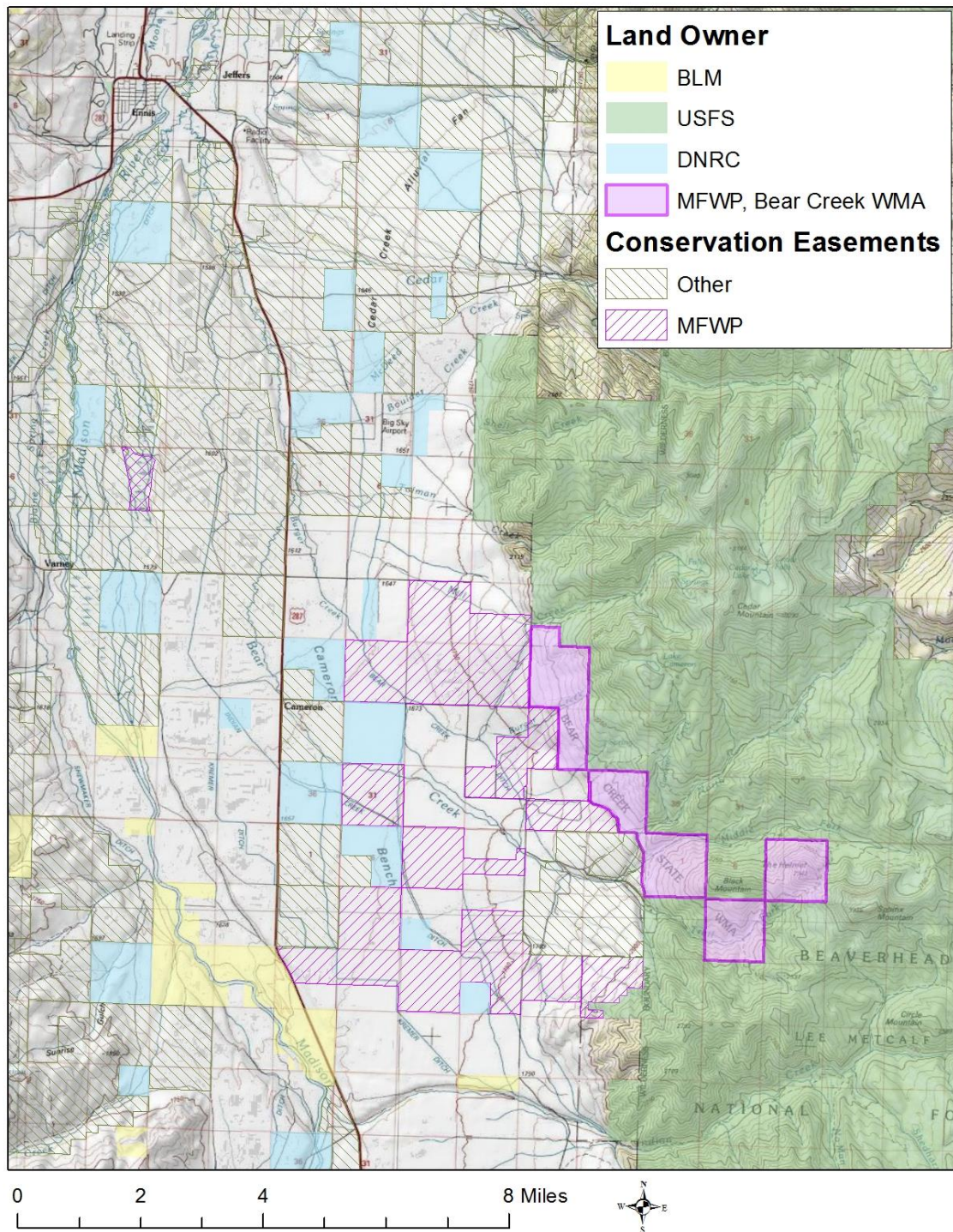


Figure 1: Bear Creek Wildlife Management Area location map. Bear Creek Wildlife Management Area, in purple, exists approximately 12 airline miles south-southeast of Ennis MT, 5 miles due east of Cameron MT, along and inside the Lee Metcalf Wilderness Area (USFS, green). The area is surrounded by other conservation lands, including private lands with MFWP-held conservation easements (purple hash) and private lands with conservation easements held by other entities (gray hash).



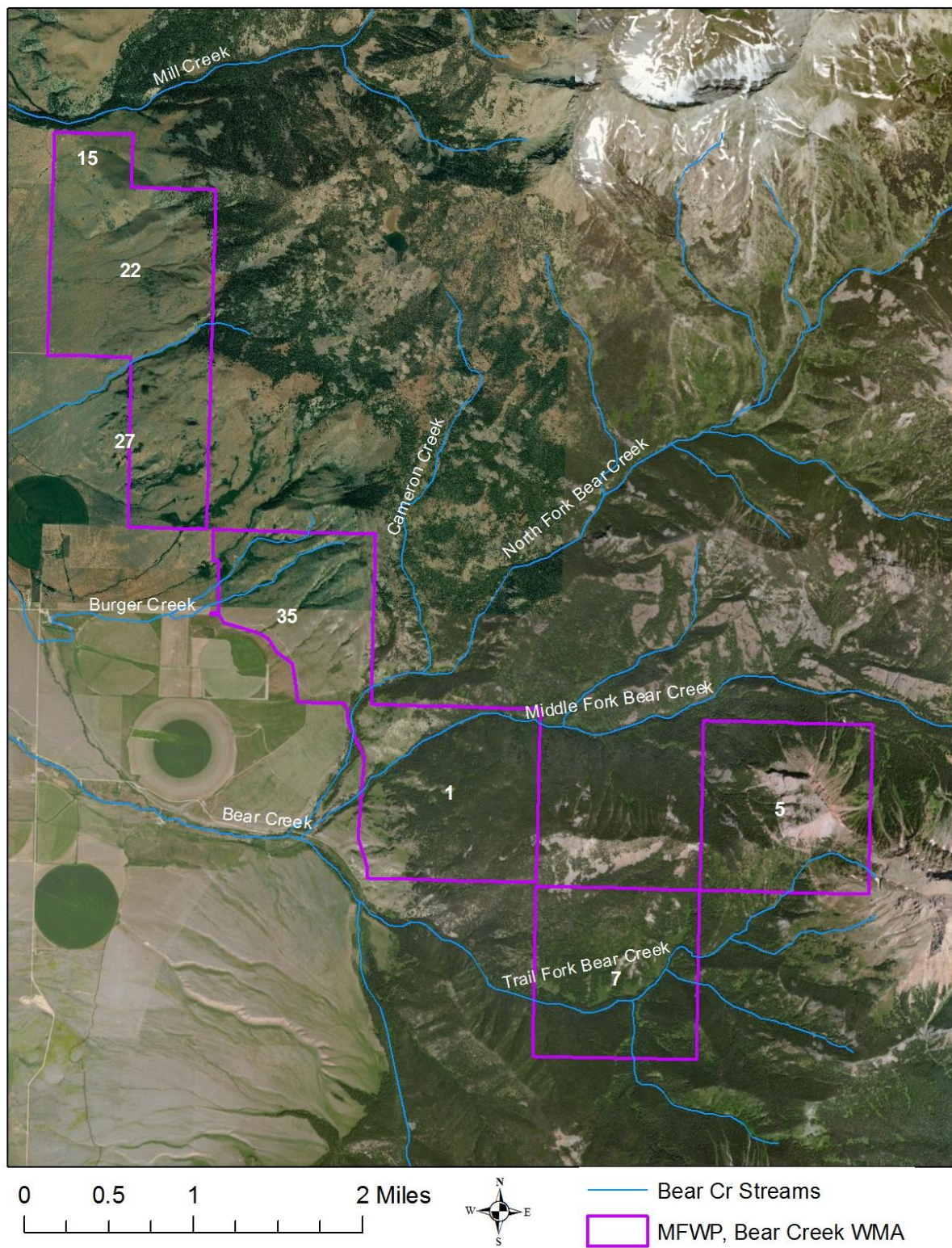


Figure 2: Bear Creek Wildlife Management Area on 2018 aerial photo. White numbers are section numbers, major creeks are labelled.



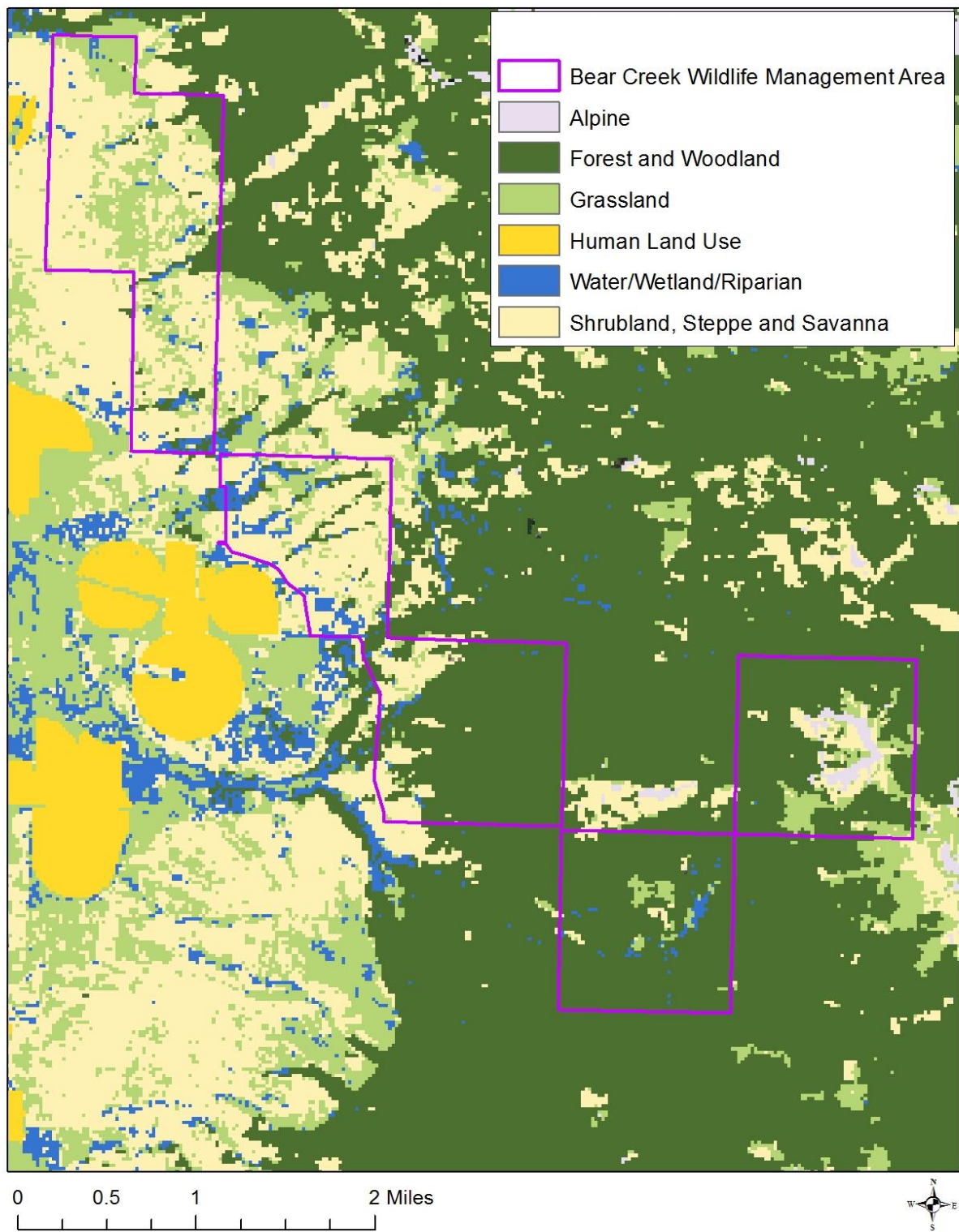


Figure 3: Bear Creek Wildlife Management Area with level 1 Montana land use/land cover values.

## Management Direction of Bear Creek WMA

Bear Creek WMA requires minimal management input. Predominantly intact native range and forest, it has been and continues to be productive for wintering wildlife. Bear Creek WMA is closed from December 1 (the end of rifle season) through May 15<sup>th</sup> to protect elk and mule deer winter range. This closure is to prevent recreational use and wildlife displacement during the critical winter months. Under MFWP ownership, Bear Creek WMA has never been grazed. There are no farming activities on Bear Creek WMA. Adjacent US Forest Service (USFS) allotments were closed in the late 1970s. Management direction will require input of energy and funds to weed control, maintaining the fence boundaries with private lands to the west, keeping roads and parking areas functional, and periodically assessing range vegetation to ensure the functional winter range will be maintained. Future management direction could include a land trade with the USFS involving Sections 5 and 7. These sections are completely enclosed in the Lee Metcalf Wilderness Area with no road access, so management options are limited.

## Habitat Effectiveness

Bear Creek WMA is approximately 470 acres of grassland habitat type, 1,100 acres of shrub-steppe habitat type, 1,680 acres of forest and woodland habitat type, and 40 acres of alpine habitat. Species that have been observed on Bear Creek WMA, and species that could be present, are listed in Appendix B.

### Big Game Winter Range

The focal species for management of this WMA are mule deer and elk. For these species, the prime winter range exists between Mill Creek at the northern boundary of the WMA and the North Fork of Bear Creek (Figure 4). These sections are predominantly grassland and shrub-steppe with high winter forage potential. The three sections in and adjacent to the Lee Metcalf Wilderness Area are forest and alpine systems which, though less conducive to winter range, are excellent security cover and are used by elk during the fall.

Bear Creek WMA is an important mule deer winter range. MFWP counts mule deer during spring green-up (generally late March through April) before mule deer migrate to summer range. The counts range from Ennis Lake at the north to Quake Lake at the south, from the Madison River east to the Madison Foothills. The total count has averaged about 1,000 total mule deer from 2009-2018. Over this time, the number of mule deer counted on or adjacent to Bear Creek WMA has averaged about 220, accounting for about 22% of the total count. The entire count area covers about 275mi<sup>2</sup>, and the Bear Creek WMA area is about 8.25mi<sup>2</sup>, only 3% of the total survey area. With 22% of the total mule deer count occurring in 3% of the total count area, the importance of Bear Creek WMA for mule deer winter and spring range is clear.



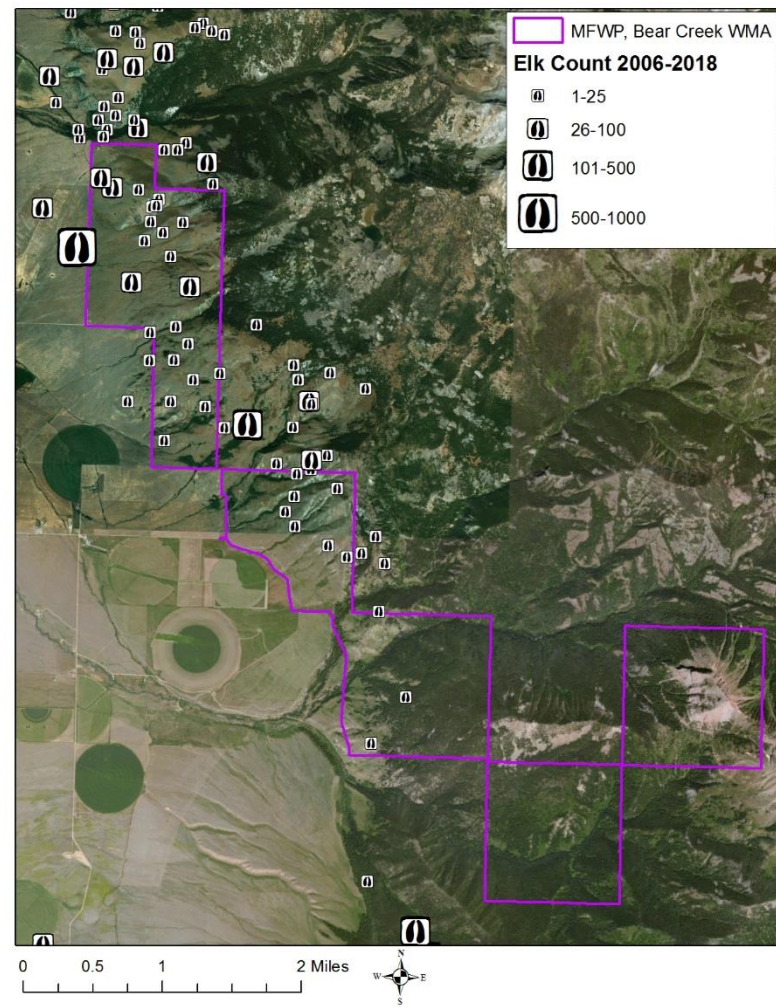
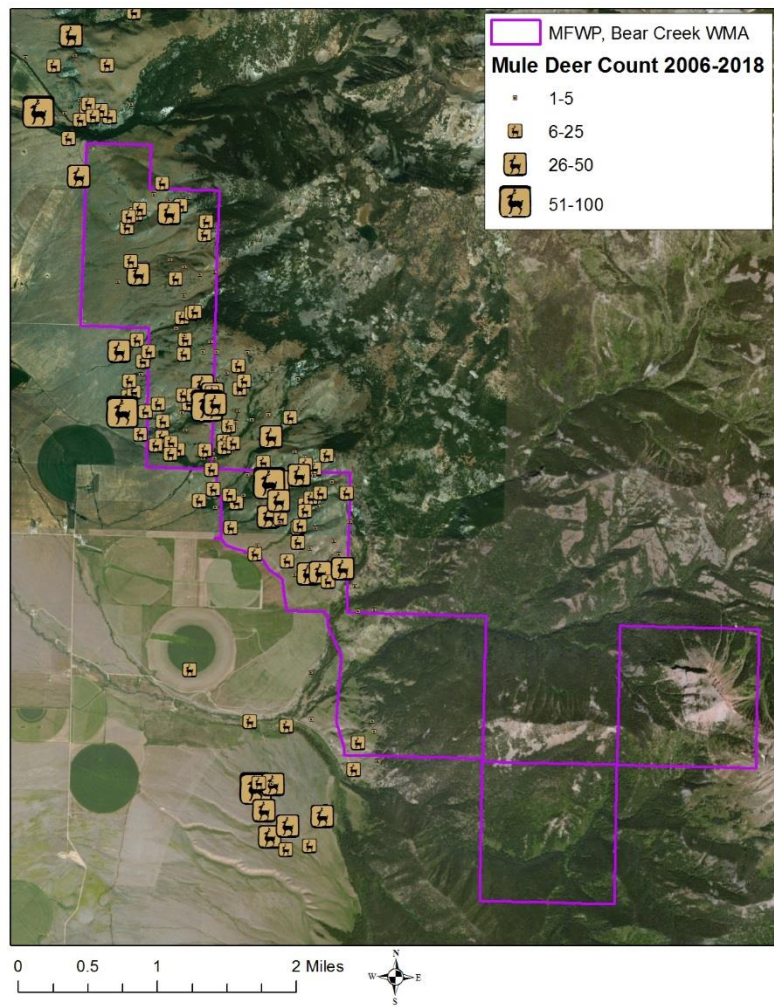


Figure 4: Spring mule deer counts (left) and winter elk counts (right).

The elk herd that winters on Bear Creek WMA is the southern unit of the of Hunting District (HD) elk population. This HD 360S elk herd unit winters on Bear Creek WMA and lands generally between Shell Creek (Ennis Airport Area) and Indian Creek. This herd unit, and the neighboring 362 herd, have been subject to much research, receiving VHF radio collars during an elk movement study from 1976-1986, GPS collars as part of the statewide wolf-ungulate research project 2005-2006, and GPS collars again in 2018 as part of a research effort evaluating brucellosis mitigation measures, such as herding and hunting. These data indicate the elk that winter in the Bear Creek area most often come from summer range in HD 310 and different creeks along the upper Gallatin River. Their summer ranges may include the headwaters of the Gallatin River, Bacon Rind Creek, Sage Creek, Crown Butte, the Taylor Fork, and Buck Creek. Summer ranges include lands inside and outside Yellowstone National Park. The elk may have migrated more than 30 airline miles to reach this winter ground. Bear Creek WMA is not their sole wintering area. Elk rely heavily on the native grasslands and agriculture in the nearby private lands, underscoring the value of the conservation easements in the area held by MFWP and other entities. The 2005 MFWP Elk Management Plan population objective for the HD 360 south herd unit is for 1,000 elk (range = 800 to 1,200). Although elk populations in the greater Madison Valley (HD 360 north herd unit and HD 362 herd unit) are all increasing, recent counts in HD 360 south have been within or below objective (Figure 5). Counts in HD 360 south are constantly challenged by movement dynamics of elk, as elk do cross Indian Creek going both directions. The larger HD 362 herd occasionally moves up from the south, crossing Indian Creek and being counted in HD 360 south, resulting in increases of 1,500 elk or more. Game damage and brucellosis mitigation efforts in the Madison Valley also result in human influence on elk movements between herd units. Large-scale late-season management hunts occur annually, and an “elk hazer” has been hired by MFWP to move elk off private lands to defray game damage and/or brucellosis risk. The elk hazer generally moves elk south across Indian Creek and into HD 362. Despite these challenges and activities, between 200 and 1,100 elk may be counted annually on or adjacent to Bear Creek WMA during winter flights. From the county road, some number of elk, particularly bull elk, may be visible on the WMA all winter long.

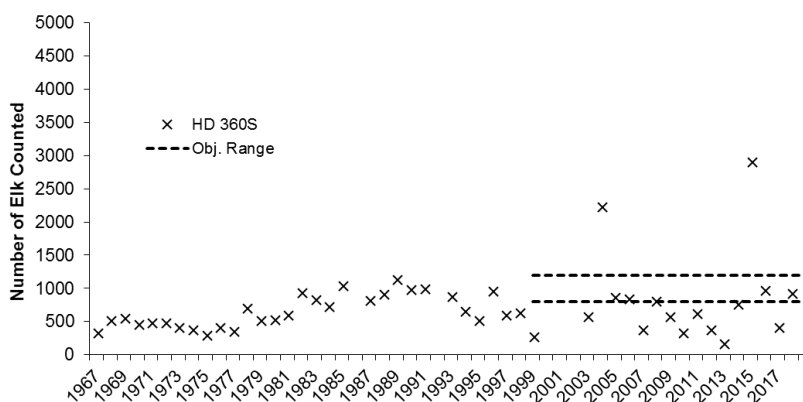


Figure 5: The number of elk counted during winter flights in the HD 360 south unit (Bear Creek area) with the objective range (800-1,200) in dashed lines.

## Other Wildlife

Bear Creek WMA provides important seasonal and year-round habitat for grassland, sagebrush, and forest obligate species and generalist species which utilize the mosaic of habitat types on and around the WMA. Mountain goats are frequently observed on The Helmet, although they have also been observed in the Trail Fork Section 7. Moose may occur throughout the WMA but have most often been observed in the Burger Springs area. Pronghorn are abundant in the open fields west and south of the WMA. Wolves and coyotes have been observed across the WMA. Black bears and grizzly bears may occur throughout the WMA. The gutpiles left by deer and elk hunters provide seasonally-important food sources, and bears do use the Burger Springs area, chokecherry bushes, and riparian areas on the WMA. With grizzly bear recovery, increased density and increased population distribution, WMAs that were traditionally thought of as ungulate winter range have become or are becoming occupied grizzly bear habitat. Awareness and efforts to reduce conflicts need to be recognized. This recognition is for human safety and long term grizzly bear conservation. This is best done through education of the standards, rules or regulations that help reduce conflicts and increase public safety.

The Montana Natural Heritage Program maintains a database with sightings of wildlife species, with categories by status. Species of Concern (SOC) are native taxa that are at-risk due to declining population trends, threats to their habitats, and/or restricted distribution. Potential Species of Concern (PSOC) are animals with potential vulnerability or for which additional data are needed before an accurate status assessment can be made. Species with Special Status (SSS) are species with some legal protections in place but are otherwise not a Montana Species of Concern. A search of this database (9/1/2018) for the Bear Creek WMA, and a surrounding radius of approximately 10 miles (Figure 6), revealed 125 documented wildlife species (87 bird species, 33 mammal species, 2 amphibian species, and 3 reptile species; Appendix B). Of these, five mammals were classified as SOC, two as PSOC, and one federally ranked as Proposed Threatened (wolverine). Fourteen species of birds were classified as SOC, one as PSOC, one as SSS, and two federally ranked under the Bald and Golden Eagle Protection Act.

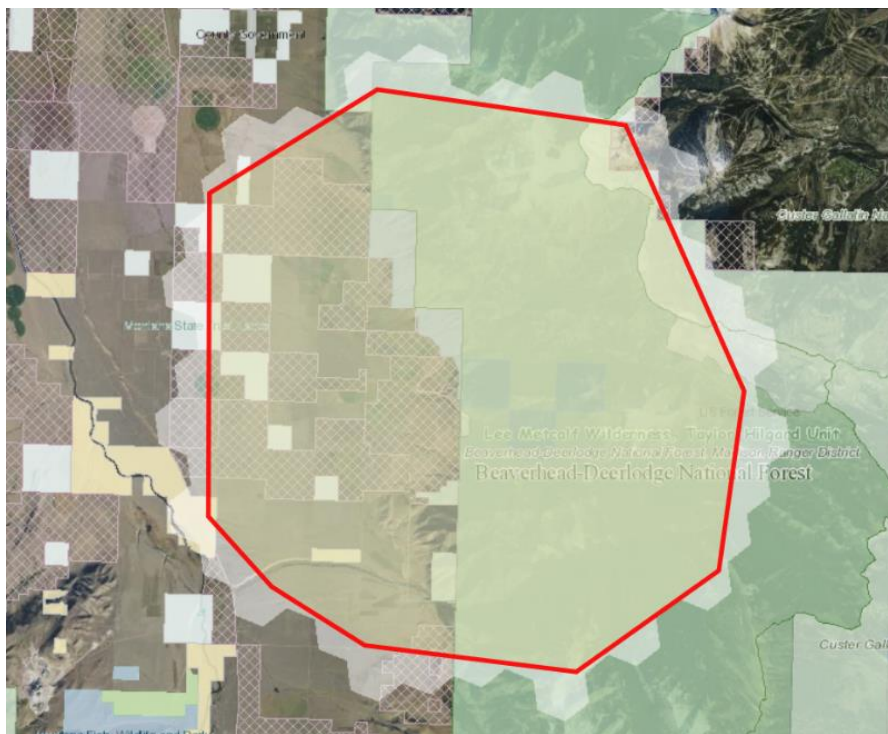
Additionally, 242 species could potentially be present in the polygon based on their range, presence of associated habitats, or predictive distribution models (Appendix B). These include 192 bird species (including 36 SOC and eight PSOC), 41 mammal species (including six SOC, five PSOC, and one federally ranked as Threatened (Canada lynx)), four amphibian species (including three SOC) and five reptile species (including one SOC).

Mammals classified as SOC which are typical of high alpine, coniferous forest and/or grassland sagebrush and coniferous forest mix, which have been observed or could potentially be present in the WMA or the surrounding area, include wolverine, grizzly bear, Canada lynx, little brown myotis, hoary bat, Townsends big eared bat, and fringed myotis. Numerous other non-game, furbearers, and mid-sized carnivores, and their respective prey species, are abundant within this habitat type. Mammals classified as SOC which are typical of grassland or open sagebrush habitat which have been observed or could potentially be present in the WMA or the surrounding area include Wyoming ground squirrel, Merriam's and Preble's shrew.



Birds classified as SOC which are typical of high alpine, coniferous forest and/or grassland sagebrush and coniferous forest mix which have been observed or could potentially be present in the WMA or the surrounding area include black and gray crowned rosy finches, Clarks nutcracker, pinyon Jay, evening grosbeak, great gray, flammulated and boreal owls. The mixed-aged conifer stands interspersed with open meadows and grassland foothills support many raptors, many of which are classified as SOC, include Swainson's hawk, wintering rough-legged hawk, and peregrine falcon. The mosaic structure of the mixed conifer will also provide nesting habitat for Northern goshawk, sharp-shinned hawk, and Cooper's hawk. The dense shrub under-story and the associated edge habitat provides important nesting, feeding, and/or protective cover for neotropical migrants and game birds including ruffed and dusky grouse. Grassland bird species, including some which are classified as SOC, that are abundant within the WMA include sharp-tailed grouse, long-billed curlew, prairie falcon, ferruginous hawk, McCowan's longspur. These grassland foothills are also highly valuable for foraging and migrant bald eagles and golden eagles. There are at least two documented active bald eagle nests less than two miles South and Southwest of the WMA.

Bear Creek WMA is also prime habitat for other forest carnivores and/or mid-sized mammals classified as furbearers, non-game, predators, or species in need of management. Species that have been documented and/or could potentially be found on the WMA include; gray wolf, mountain lion, bobcat, red fox, striped and western spotted skunk, least, short-tailed, and long-tailed weasels, badger, American marten, raccoon, muskrat, American mink, river otter, muskrat, and beaver.



*Figure 6: Polygon used to describe species occurrence (actual observed) and predicted ranges for Bear Creek WMA and surrounding foothills and forested area.*

Overall Bear Creek WMA has a plethora of non-game SOC, and the 2015 State Wildlife Action Plan (SWAP) also identifies Species of Greatest Inventory Need (SGIN) for SOC or PSOC. Several SGIN could potentially occur on the WMA. While no management actions currently exist for non-game species, maintaining habitat is crucial for their persistence. Future management actions could therefore involve habitat modifications which meet objectives for big game management while also providing additional indirect benefits to other species. Continual documentation of species occurrence is also necessary if management actions are to be developed and implemented. Documentation of non-game wildlife will be continued and further developed on the WMA through incidental reporting and/or systematic surveys. While there are systematic surveys that occur off the WMA, currently none are being conducted on the WMA itself, but MFWP's native species biologist will work alongside the area biologist to develop structured surveys for SOC's and SGIN as the need is presented. Updated species lists, including bird lists, will be developed and made accessible at the R3 headquarters or available as a web-based PDF.

## Forest Management

There are three sections that are predominantly timber (Sections 1, 5, and 7), largely composed of lodgepole pine and Douglas fir. However, there is currently no road access to any of these sections preventing many forms of timber management. Sections 5 and 7 are completely surrounded by the Lee Metcalf Wilderness Area. Private land borders Section 1 to the west, and Wilderness lands border it to the north, east, and south. Elk currently use the thick timber, in Section 7 in particular, as hiding cover.

## Range Management

Bear Creek WMA is dominated by native perennial grass, forb, mosses, lichen, sub-shrub and shrub communities. Native grasses include Idaho fescue, bluebunch wheatgrass, and Sandburg bluegrass (Harrington, Appendix C). Non-native grasses include crested wheatgrass, smooth brome, timothy, orchard grass, Kentucky bluegrass, and cheatgrass. Non-native grass presence aligns with parking areas, trails, and roads. The forb community includes arrowleaf balsamroot, sticky geranium, silvery lupine, and others. Shrubs include big sagebrush, silver sagebrush, gray horsebrush, green rabbitbrush, and chokecherry. Dense clubmoss occurs in the WMA. The soil surface is stable and vegetative litter has increased over time (Harrington, Appendix C).

Draft rangeland monitoring reports (Harrington, Appendix C) suggest desirable native grass and forb communities have been stable through the analysis period, and that the range continues to provide good forage for elk and mule deer. This draft report suggests management needs for wildlife are being met and that current management should continue.

There is a USFS wildlife enclosure present in Section 26 and visible from Burger Creek parking area. The southwestern corner of the enclosure touches the WMA property. This is a common staging area for antler hunters in spring: on the WMA opening day, antler hunters will have come from the USFS and will be sitting at this corner.

## Weed Management

MFWP uses an integrated approach for managing noxious weeds (see Montana Weed Management Plan at <http://fwp.mt.gov/fishAndWildlife/habitat/noxiousWeeds/>). This plan outlines weed control options including mechanical methods, biological control, herbicides, grazing animals, and cultural methods (methods that enhance desirable vegetation to slow weed invasion). This Weed Plan provides guidelines to the WMA maintenance crew, which is based at the nearby Wall Creek WMA. This proximity enables the crew to access Bear Creek WMA periodically throughout the year for repeat herbicide applications.

The Weed Plan notes the importance of annual spraying and monitoring of high-risk public use sites (i.e., roads, trailheads, and parking areas; also called the Visitor Service Zone) to reduce spread to non-infested sites. The WMA maintenance crew focuses on these sites multiple days a year, applying herbicide treatments with ATVs and UTVs away from the roadway and use the spray truck and hoses close to the roadways. Backpack spray units are a last resort due to the time and logistics involved the hiking to refill the unit and measuring the application rate. Aerial spraying can be effective but can cause damage to non-target species and areas.

On Bear Creek WMA, knapweed is present from Burger Spring to the Trail Fork of Bear Creek, with a challenging infestation that bridges into the Lee Metcalf Wilderness at the North Fork trailhead. Other weeds include yellow toadflax, hoary alyssum, houndstongue, penny cress, and bull thistle (Figure 7). Weeds occur along every road and trail. The chemicals currently used include Milestone and Plateau (Imazapic SP). Transline is used in areas with dense native shrubbery to prevent damage to important mule deer browse. An anti-drift surfactant (Compadre) is used to keep the spray on the targeted weeds and away from desirable native species. Tordon or 2-4-D Amine is avoided to prevent cheatgrass incursion.

## Infrastructure

### Roads

Road access to Mill Creek is via perpetual public easement as of 1965. The easement clarifies the road maintenance falls to MFWP. Road access to Burger Creek is via 2 perpetual public easements dated 1964. MFWP is responsible for the maintenance of this road beginning at Bear Creek Angus Ranch Headquarters through to the USFS North Fork Trailhead. As of spring 2018, this road experienced a slump and became nearly impassable. The WMA maintenance crew patched it up temporarily in summer 2018, but the road requires contracted work to regrade it and to address drainage issues.



## Fences

There are no longer internal fences within Bear Creek WMA, nor along the east boundaries with the USFS lands, although there may be the occasional residual fencepost from where fences used to be. The west side of Bear Creek WMA borders private lands, and MFWP must maintain these boundary fences. Of the west side boundary fences, the only portion needing immediate attention is the stretch along Section 22 and 15. This fence is in poor condition, and a 7/08/2018 field trip revealed an elk carcass tangled in the fence despite nearby open gates.

## Buildings

There are no buildings on Bear Creek WMA.

## Parking Areas

There are four parking areas on Bear Creek WMA (Figure 7). These exist at the entrance to the WMA on Mill Creek Access Road, the Mill Creek Trailhead, Burger Creek, and the North Fork Bear Creek Trailhead. The Mill Creek Access Road, Mill Creek Trailhead, and Burger Creek parking areas are all in grass substrate whereas the North Fork Trailhead is on gravel substrate. As needed, grassy parking areas can be sprayed with Roundup or other herbicide to keep grasses down and potential risk of wildfire from vehicle mufflers. Heavy vehicle use generally keeps grass low at Mill Creek, but at the lesser-used Burger Creek parking area, grass can get quite tall. Future infrastructure work at Burger Creek could include installing a small footprint of a parking area for 3-5 vehicles by grading and gravelling to prevent future maintenance needs at the site. The Mill Creek Trailhead parking area has seen increased use, and users have pioneered a two-track loop. The pioneered loop is widening and needs to be addressed, especially as people continue to use this track and then swing wide to avoid previously-established ruts.

## Culverts

There are no culverts on the WMA, but some may be necessary below Burger Springs as the drainage on the Burger access road is improved. There is a headgate to a ditch where Bear Creek Angus holds a water right in Section 35. The private landowner may access this headgate as needed through the year. MFWP does not have any maintenance responsibility here.

## Signs

There are many opportunities to improve signage, both to note property boundaries and to note closure dates. For more detailed information, see Appendix D (Infrastructure).

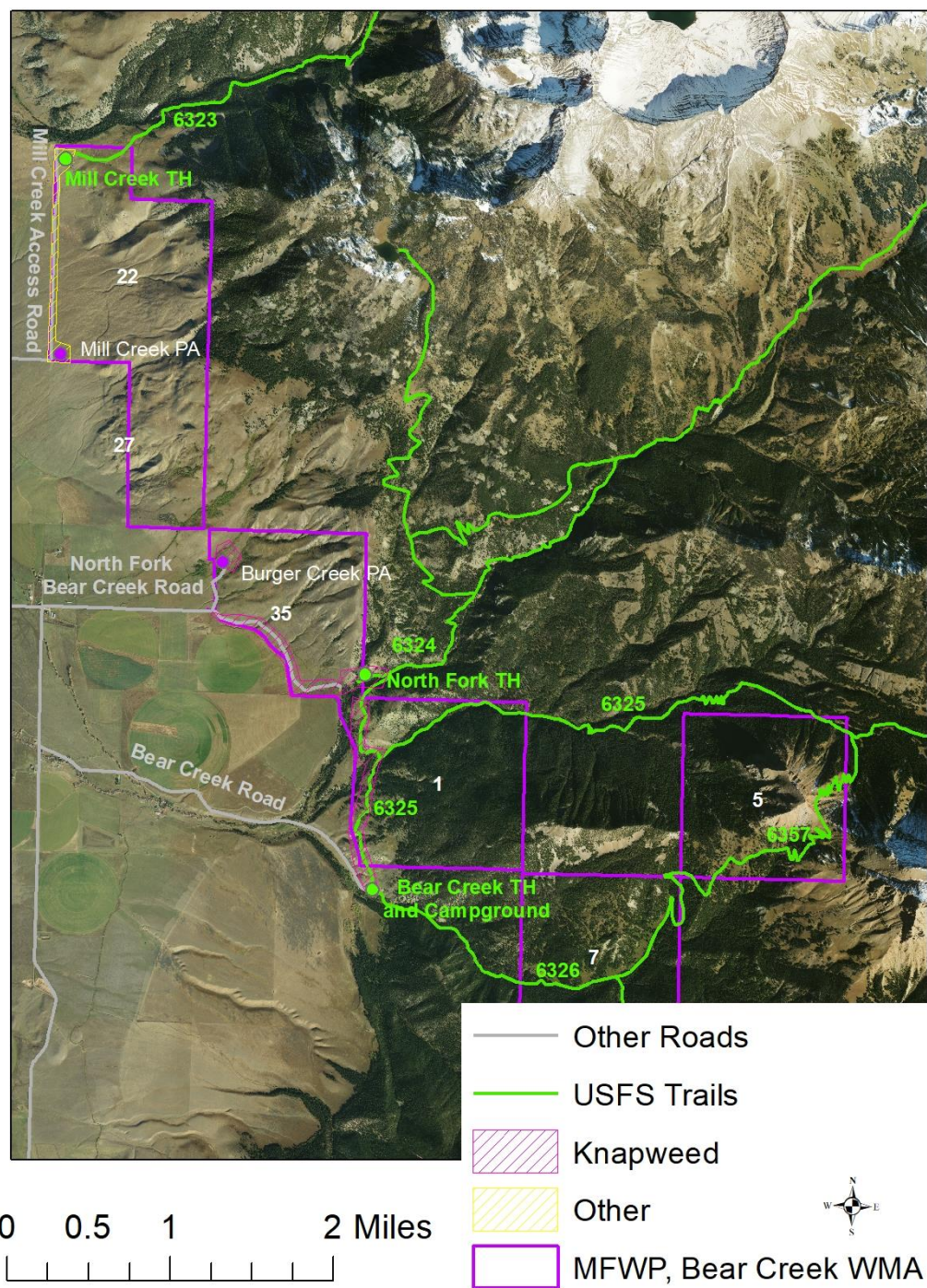


Figure 7: Bear Creek WMA Infrastructure. WMA boundaries (purple) with public access roads (grey), USFS trailheads (TH - green circles), USFS trails (green), and MFWP-managed parking areas (PA - purple circles). Known weed locations in polygons with pink diagonal lines representing knapweed presence and yellow diagonal lines representing other weeds (including hoary alyssum and yellow toadflax).

### Infrastructure Needs: Summary

ITEM	LOCATION	NEED	TIMELINE
Boundary Fence	West side Sections 22 and 15	1.25 miles of fence refurbishment to wildlife-friendly standards	Within 1-5 years
Mill Creek Parking Area*	Section 15, Mill Creek Trailhead	Grade and gravel the pioneered loop road 0.12 miles	Within 1-5 years
North Fork Road*	Section 35	Grade and gravel approximately 1 mile of road, address drainage issues	Within 1-5 years
Burger Creek Parking Area*	Section 35	Create small gravel parking area	Within 1-5 years
Signage	Throughout	Maintain and replace as needed	Long-term
Boundary Fence	West side, Sections 1, 15, 22, 27, 35	Repair as needed	Long-term

\* Requests for repairs to the Mill Creek Parking Area, North Fork Road, and Burger Creek Parking Area, could be combined into a singular repair opportunity.



## Public Recreation

### Hunting

Hunting is a main form of recreation on Bear Creek WMA. Bear Creek WMA lies in deer and elk HD 360, which allows either-sex white-tailed deer harvest, antlered buck mule deer harvest, and before 2018, allowed brow-tined bull harvest with antlerless harvest through archery season or B licenses (398-80) only. Due to the increasing population, and as of 2018, hunters with a general elk license may harvest either brow-tined bull or antlerless elk. HD 360 is an excellent hunting area foremost for elk (average annual harvest of approximately 450), followed by mule deer (average annual harvest approximately 140), and white-tailed deer (average annual harvest 129).

Other species are hunted on and around the WMA. Mountain goat hunters in goat district HD 325 often meet success on The Helmet. Black bear harvest occurs throughout the WMA. Wolf harvest and lion harvest on the WMA occurs concurrently with deer and elk rifle seasons only, and do not occur during the winter closures.

### Antler Hunting

Hunting of shed elk and mule deer antlers is a popular recreation activity on Bear Creek WMA. May 15<sup>th</sup> at noon when the WMA opens, 40 or more vehicles flood up the Mill Creek access and the Burger Creek access. A dozen antler hunters on horseback or foot may enter the WMA from the adjacent private lands, and another dozen from the USFS access at Trail Creek. Antler hunters will be staged at the USFS/MFWP boundary, prepared to enter the WMA when they see the gates open. Unfortunately, the popularity of antler hunting has also led to a rise in people trespassing onto the WMA during the winter closure. This can lead to wildlife displacement off the WMA.

### Other Recreation

Approximately 7 miles of USFS designated hiking trails exist through the WMA (Figure 7). There are two designated USFS trailheads on the WMA, with an additional USFS trailhead and campground adjacent to the WMA. The Mill Creek and Burger Creek trailheads are only accessible via a WMA road, closed to the public from December 1 - May 15<sup>th</sup> each year. The USFS-operated Bear Creek Campground and trailhead are open year-round. The campground offers a rental cabin, stock ramps, a corral, outhouse, and many camp sites. Through pre-existing access easements, the Forest Service trails are open year-round, even though WMA lands are closed. This only pertains to trails from the main Bear Creek trailhead, as the other two trailheads are inaccessible. Use of the foothills trail, 6325, can be deleterious to wildlife if used during the winter closure period. Winter use is increasing, and the rental cabin is a popular destination for skiers. Paragliding and paragliding skiing are becoming more popular at this site. Other non-consumptive uses may include dispersed-site camping, wildlife viewing, birdwatching, photography, hiking, horseback riding, snowshoeing, and rock climbing.

## Appendix A: Background History

### Purchase History

Bear Creek WMA was purchased for \$29/acre, for a total cost of just over \$100,000.

1956 – George and Ethel Carkeek

- Lots 2, 3, 4, and 5 in the W ½ of NE ¼ of T7S R1E S22

1956 – Karl and Hazel Warburton

- T7S R1E Section 27 all \*
- T7S R1E Section 35 all \*
- T7S R1E Section 34 – S ½ \*
- T8S R1E N½ of S½ and SE1/4 of NE ¼ of Section 4 \*
- T8S R1E Section 5 all, and the middle third of Section 9 \*

1957 - Karl and Hazel Warburton

- All of Section 5 and Section 7 in T8SR2E

1957- Alice Meigs Orr

- All S1 T8S R1E and the small tract in Section 2.

1960 – A. Randall and Ann Storey

- W ½ of SW ¼ and SE ¼ of SW ¼ and SW ¼ of SE ¼ in Section 22 T7S R1E
- Lots 6, 7, and 8 in Section 15 T7S R1E

1961 – Bureau of Land Management

- Lot 1, NE ¼ of SW ¼ and NW ¼ of SE ¼ Section 22 T7SR1E

1964 – Raymond and Donna Carkeek

- Granted MFWP a right-of-way easement across sections 34 and 35

1964 – Lucile Wellman

- Granted MFWP a right-of-way easement across the T7S R1E Sec 34 (S ½ of NW ¼)

1964 – Raymond Carkeek

- Portion of Section 35 T7S R1E

1965 – Lillie Storey

- Granted MFWP perpetual right-of-way across Section 21 T7S R1E. MFWP closes this road annually during the WMA closure period December 1-May 15. The landowner of Section 21 may use this road to access his/her own lands.

\* Portions of these lands purchased in 1956 were considered surplus lands, originally purchased in whole but with immediate intent to sell or trade portions. Today, MFWP retains fee title to T7S R1E Section 27 east half and approximately ¾ of T7S R1E Section 35. As of 1994, the remainder of these lands ultimately ended up as MFWP-held conservation easements.

# 1964 Management Plan

## Management Plan for Madison Elk Range (W-90-D) 1964

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R-9 1964  
p.m.

### 1. Introduction

Lands were acquired for the Madison-Bear Creek elk commencing in 1954, when 1260.92 acres were purchased from Karl G. Warburton for \$20,000.00. Purchases were also made in 1956 (2822.76 acres), 1957 (674.11 acres), 1959 (23.66 acres), 1960 (359.17 acres) and in 1963 (115.45 acres). Some of the land was sold and traded by the department back to the original owners. The present size of the range is 3463.42 acres. Damage complaints prompted the purchase of this range.

### 2. Description of Area

a. The area lies four miles east of Cameron and is bordered on the east by the Forest Service lands. Average temperature at Ennis (13 miles northwest) is 43° F. and the annual rainfall is around 10½ inches. Elevations vary from 6,500 to 7,500 feet. The Helmet, which occurs on Section 5, T8S, R2E, is over 10,000 feet. The game range (excluding Sections 1, 5 and 7 in T8S, R2E) lies in a foothill area of the Madison Range and is characterized by a bunchgrass aspect (*Agropyron spicatum* and *Festuca idahoensis* being the most important from the elk food standpoint), with a generous mixture of forbs. A few bushy draws also occur on the area. The foothills of the Madison range is characterized by alluvial fans in nearly every major drainage. Parts of the game range occur on such fans. The remainder is on the steep sided foothill slopes. Bear Creek is the major drainage of the area and more or less forms the south border. Mill Creek, a smaller drainage, forms the north boundary.

b. Elk and deer winter ranges are the major types of wildlife habitat occurring on the area. Mountain grouse occur at various places on the range however.

c. The basic wildlife resource on this area is the elk and deer winter forage. Recreational values are difficult to assess, but it can be assumed the area has "something" for the non-hunters, too.

### 3. Wildlife Management

a. Objectives of any management program on a game range must be oriented toward the vegetation or range. On this game range, efforts will be directed to providing maximum quality and quantity of elk and deer winter forage. Such a program will insure the maximum number of animals for harvest by hunting.

b. Applicable range and population trend, inventory, and survey methods will be employed periodically to assess the status of the resource. From these evaluations a sound management program can develop.



## The Federal C-Strip

There is a “C-Strip” or an “exemption strip” of USFS-held land within the MFWP portions of Section 15. Its history goes back to 1923 when Roy Mason patented adjacent tracts. Historically, when Homestead patents were issued, it was common for a strip of land to be excluded from the patent to allow access to the Federal lands adjacent to the homestead. Such strips were often identified as Tract C on plat maps. This C-Strip measures approximately 1.26 acres (Figure 8,9).

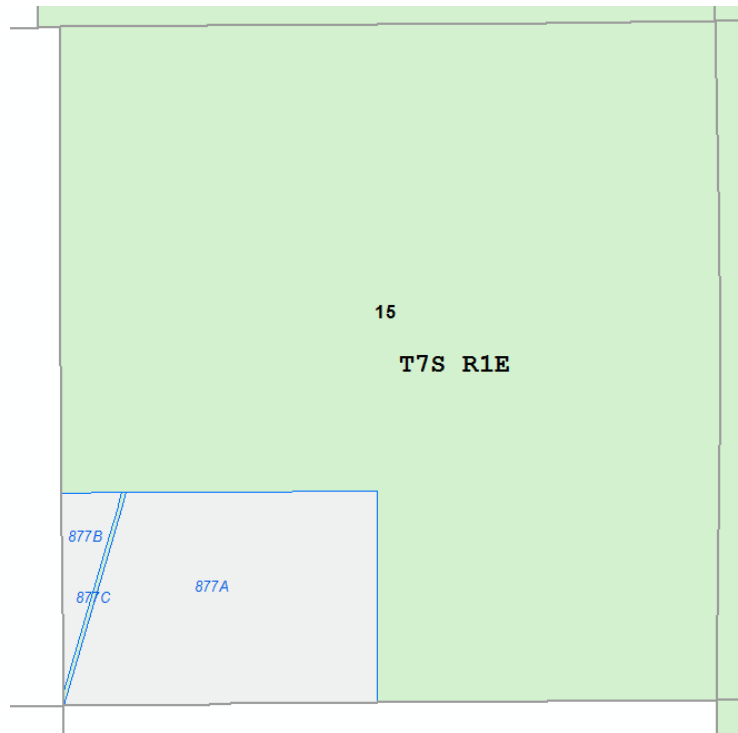


Figure 8: The portion of Bear Creek WMA (tract 877A and 877B) with the Federal “C” strip (tract 877C) crossing to the larger USFS-owned Section 15.

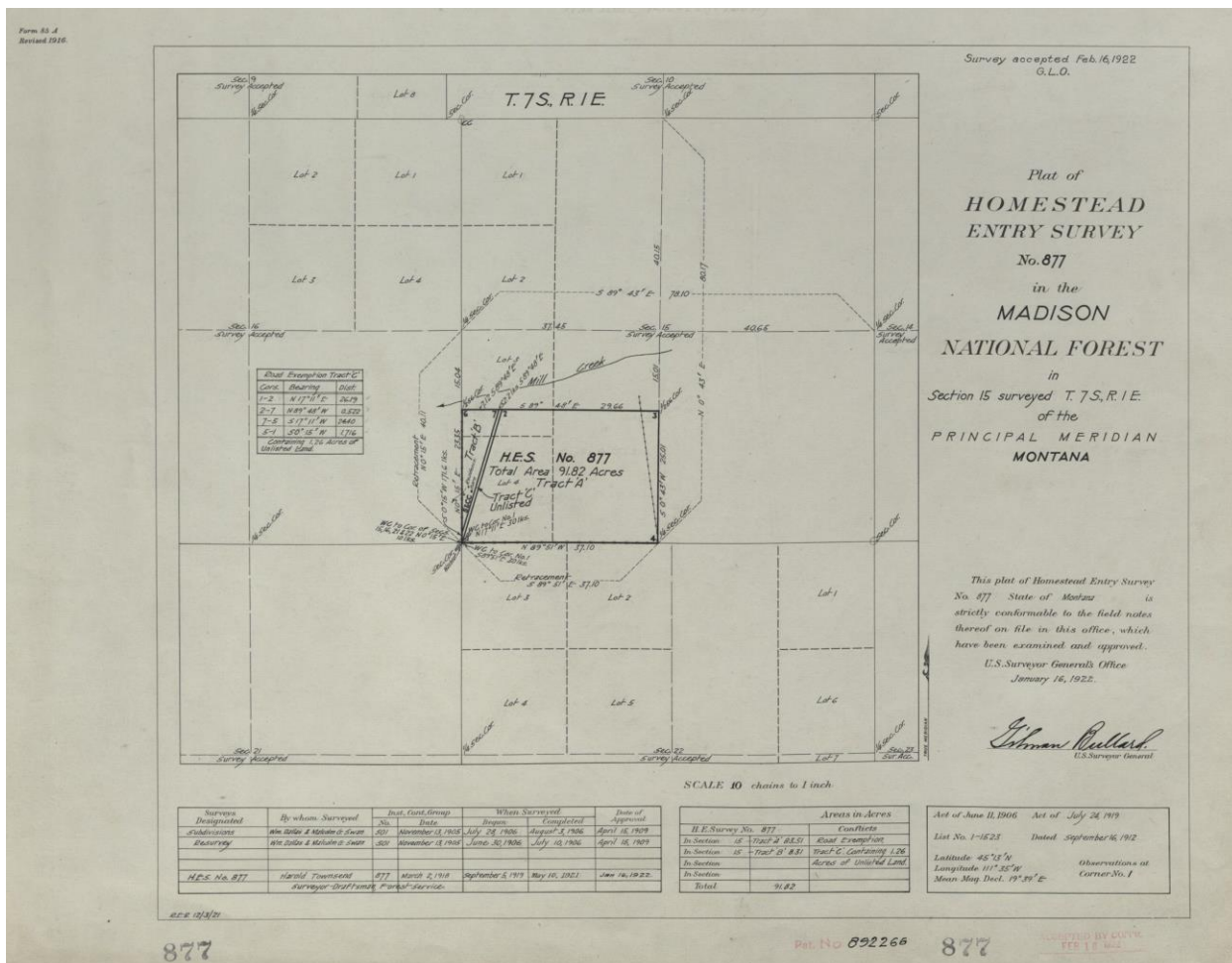


Figure 9: Homestead entry survey referencing the "C strip" across what is now the MFWP-held portion of Section 15, Bear Creek WMA.

## Historical Activities

Mr. Fred King served as WMA manager in Region 3 from 1972 through 2009. During his 37 years, Fred accumulated a wealth of historical information. Julie Cunningham interviewed him 7/16/2018 during a field trip. Historical facts about Bear Creek WMA include:

- Wildlife biologist Lloyd Casagrande from Butte was killed in a plane crash at the Mill Creek trailhead during wildlife surveys in the 1950s
- Above WMA in Section 26, the remnants of an historical elk corral trap remain to this day. Elk were hazed by helicopter into the trap for the capture and collaring work that occurred from 1976-1986 in the Madison Valley.
- MFWP used to lease Section 21, now in conservation easement, to provide additional wintering elk habitat.
- USFS cattle allotments above the WMA closed in approximately 1977, after which MFWP removed boundary fences from the east side of Bear Creek WMA.

## Appendix B: Species Lists

Species lists derived from a 9/1/2018 Montana Natural Heritage Program Search. Tables for amphibians, reptiles, birds, and mammals are presented. Detection refers to whether the species has been documented on or within a 10-mile radius of Bear Creek WMA (observed) or whether the species could possibly occur on the WMA given habitat needs, known range of the species, and/or proximity to other sightings (potential). Montana Status, if Species of Concern (SOC) or Possible Species of Concern (PSOC) or Species of Special Status (SSS) is listed.

### Amphibians

Common Name	Scientific Name	Habitat	Distribution	Detection	MT Status
Columbia Spotted Frog	<i>Rana luteiventris</i>	Wetlands, lakes, ponds	Resident	Observed	
Western Tiger Salamander	<i>Ambystoma mavortium</i>	Prairie ponds, lakes and reservoirs	Resident	Observed	
Northern Leopard Frog	<i>Lithobates pipiens</i>	Wetlands, floodplain pools	Resident	Potential	SOC
Plains Spadefoot	<i>Spea bombifrons</i>	Wetlands, floodplain pools	Resident	Potential	SOC
Western Toad	<i>Anaxyrus boreas</i>	Wetlands, floodplain pools	Resident	Potential	SOC
Boreal Chorus Frog	<i>Pseudacris maculata</i>	Marshes, ponds, small lakes, wet meadows	Resident	Potential	

### Reptiles

Common Name	Scientific Name	Habitat	Distribution	Detection	MT Status
Common Gartersnake	<i>Thamnophis sirtalis</i>	Generalist	Resident	Observed	
Northern Rubber Boa	<i>Charina bottae</i>	Montane forest	Resident	Observed	
Terrestrial Gartersnake	<i>Thamnophis elegans</i>	Generalist	Resident	Observed	
Greater Short-horned Lizard	<i>Phrynosoma hernandesi</i>	Sandy / gravelly soils	Resident	Potential	SOC
Gophersnake	<i>Pituophis catenifer</i>	Sagebrush grassland	Resident	Potential	
North American Racer	<i>Coluber constrictor</i>	Sagebrush grassland	Resident	Potential	
Painted Turtle	<i>Chrysemys picta</i>	Ponds, lakes, streams	Resident	Potential	
Prairie Rattlesnake	<i>Crotalus viridis</i>	Sagebrush grassland	Resident	Potential	



## Birds

### BIRDS – Observed, Species of Concern, Potential Species of Concern, and Species of Special Status

Common Name	Scientific Name	Habitat	Distribution	MT Status
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Riparian forest	Resident Year Round	SSS
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	Wetlands	Mig. Summer Breeder	SOC
Brown Creeper	<i>Certhia americana</i>	Moist conifer forests	Resident Year Round	SOC
Clark's Nutcracker	<i>Nucifraga columbiana</i>	Conifer forest	Resident Year Round	SOC
Ferruginous Hawk	<i>Buteo regalis</i>	Sagebrush grassland	Mig. Summer Breeder	SOC
Franklin's Gull	<i>Leucophaeus pipixcan</i>	Wetlands	Mig. Summer Breeder	SOC
Golden Eagle	<i>Aquila chrysaetos</i>	Grasslands	Resident Year Round	SOC
Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>	Alpine	Resident Year Round	SOC
Great Blue Heron	<i>Ardea herodias</i>	Riparian forest	Resident Year Round	SOC
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Riparian forest	Mig. Summer Breeder	SOC
Long-billed Curlew	<i>Numenius americanus</i>	Grasslands	Mig. Summer Breeder	SOC
McCown's Longspur	<i>Rhynchophanes mccownii</i>	Grasslands	Mig. Summer Breeder	SOC
Northern Goshawk	<i>Accipiter gentilis</i>	Mixed conifer forests	Resident Year Round	SOC
Peregrine Falcon	<i>Falco peregrinus</i>	Cliffs / canyons	Resident Year Round	SOC
Trumpeter Swan	<i>Cygnus buccinator</i>	Lakes, ponds, reservoirs	Resident Year Round	SOC
Hooded Merganser	<i>Lophodytes cucullatus</i>	Rivers, Riparian/Wetland	Resident Year Round	PSOC

BIRDS – Observed, no special status

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>
American Crow	<i>Corvus brachyrhynchos</i>	Open habitat with trees	Resident Year Round
American Dipper	<i>Cinclus mexicanus</i>	Riparian conifer forest	Resident Year Round
American Goldfinch	<i>Spinus tristis</i>	Open riparian forest	Mig. Summer Breeder
American Kestrel	<i>Falco sparverius</i>	Grasslands	Resident Year Round
American Pipit	<i>Anthus rubescens</i>	Alpine	Mig. Summer Breeder
American Robin	<i>Turdus migratorius</i>	Generalist	Resident Year Round
American Tree Sparrow	<i>Spizelloides arborea</i>	Open forest	Mig. Summer Breeder
Barn Swallow	<i>Hirundo rustica</i>	Human made structures	Mig. Summer Breeder
Belted Kingfisher	<i>Megaceryle alcyon</i>	Streams, riparian forest	Resident Year Round
Black-billed Magpie	<i>Pica hudsonia</i>	Open habitat with trees	Resident Year Round
Black-capped Chickadee	<i>Poecile atricapillus</i>	Mixed forest	Resident Year Round
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	Generalist	Resident Year Round
Canada Goose	<i>Branta canadensis</i>	Wetlands	Resident Year Round
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Open mixed-forest	Resident Year Round
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Open habitat / river edge	Mig. Summer Breeder
Common Merganser	<i>Mergus merganser</i>	Montane rivers	Resident Year Round
Common Nighthawk	<i>Chordeiles minor</i>	Grasslands	Mig. Summer Breeder
Common Raven	<i>Corvus corax</i>	Open habitat with trees	Resident Year Round
Common Redpoll	<i>Acanthis flammea</i>	Open woodland and shrub	Mig. Summer Breeder
Dark-eyed Junco	<i>Junco hyemalis</i>	Forest	Resident Year Round
Downy Woodpecker	<i>Dryobates pubescens</i>	Riparian forest	Resident Year Round
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Grasslands	Mig. Summer Breeder
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	Human made structures	Resident Year Round
European Starling	<i>Sturnus vulgaris</i>	Generalist	Resident Year Round
Gray Catbird	<i>Dumetella carolinensis</i>	Riparian shrub	Mig. Summer Breeder
Great Horned Owl	<i>Bubo virginianus</i>	Forest	Resident Year Round
Green-winged Teal	<i>Anas crecca</i>	Wetlands	Resident Year Round
Hairy Woodpecker	<i>Dryobates villosus</i>	Mixed forest	Resident Year Round
Horned Lark	<i>Eremophila alpestris</i>	Grasslands	Resident Year Round
House Finch	<i>Haemorhous mexicanus</i>	Open forest	Resident Year Round
House Sparrow	<i>Passer domesticus</i>	Human made structures	Resident Year Round
House Wren	<i>Troglodytes aedon</i>	Deciduous forest	Mig. Summer Breeder
Killdeer	<i>Charadrius vociferus</i>	Riparian forest	Resident Year Round
Least Flycatcher	<i>Empidonax minimus</i>	Riparian forest	Mig. Summer Breeder
Lesser Scaup	<i>Aythya affinis</i>	Ponds / Wetland	Resident Year Round
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	Forest wetland	Mig. Summer Breeder

BIRDS – Observed, no special status (continued)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>
Mallard	<i>Anas platyrhynchos</i>	Shallow ponds, wetlands	Resident Year Round
Mountain Bluebird	<i>Sialia currucoides</i>	Open forest	Mig. Summer Breeder
Mountain Chickadee	<i>Poecile gambeli</i>	Mixed conifer forests	Resident Year Round
Mourning Dove	<i>Zenaida macroura</i>	Open forest	Resident Year Round
Northern Flicker	<i>Colaptes auratus</i>	Mixed forest	Resident Year Round
Northern Harrier	<i>Circus hudsonius</i>	Grasslands	Resident Year Round
Orange-crowned Warbler	<i>Oreothlypis celata</i>	Deciduous forest	Mig. Summer Breeder
Osprey	<i>Pandion haliaetus</i>	Lakes and riparian wetlands	Mig. Summer Breeder
Pine Siskin	<i>Spinus pinus</i>	Mixed forest	Resident Year Round
Prairie Falcon	<i>Falco mexicanus</i>	Grasslands	Resident Year Round
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Forest	Resident Year Round
Redhead	<i>Aythya americana</i>	Wetlands	Mig. Summer Breeder
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Open habitat / woody draws	Resident Year Round
Ring-billed Gull	<i>Larus delawarensis</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder
Ring-necked Duck	<i>Aythya collaris</i>	Wetlands	Resident Year Round
Rock Pigeon	<i>Columba livia</i>	Human made structures	Resident Year Round
Rough-legged Hawk	<i>Buteo lagopus</i>	Open habitat with trees	Mig. Summer Breeder
Ruffed Grouse	<i>Bonasa umbellus</i>	Forest	Resident Year Round
Sandhill Crane	<i>Antigone canadensis</i>	Wet meadows	Mig. Summer Breeder
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Grasslands	Mig. Summer Breeder
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Forest	Resident Year Round
Song Sparrow	<i>Melospiza melodia</i>	Riparian shrub	Resident Year Round
Spotted Sandpiper	<i>Actitis macularius</i>	Wetland margin	Mig. Summer Breeder
Swainson's Thrush	<i>Catharus ustulatus</i>	Mature forest	Mig. Summer Breeder
Townsend's Solitaire	<i>Myadestes townsendi</i>	Open conifer forest	Resident Year Round
Tree Swallow	<i>Tachycineta bicolor</i>	Open habitat / wooded edge	Mig. Summer Breeder
Tundra Swan	<i>Cygnus columbianus</i>	Wetlands	Common Migrant
Vesper Sparrow	<i>Poocetes gramineus</i>	Grasslands	Mig. Summer Breeder
Warbling Vireo	<i>Vireo gilvus</i>	Riparian shrub	Mig. Summer Breeder
Western Meadowlark	<i>Sturnella neglecta</i>	Grasslands	Mig. Summer Breeder
Willet	<i>Tringa semipalmata</i>	Grasslands	Mig. Summer Breeder
Willow Flycatcher	<i>Empidonax traillii</i>	Riparian shrub	Mig. Summer Breeder
Wilson's Snipe	<i>Gallinago delicata</i>	Wet meadows	Mig. Summer Breeder
Wilson's Warbler	<i>Cardellina pusilla</i>	Riparian shrub	Mig. Summer Breeder
Yellow Warbler	<i>Setophaga petechia</i>	Riparian shrub	Mig. Summer Breeder

BIRDS – Potentially Present, Species of Concern, Potential Species of Concern, and Species of Special Status

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>	<b>MT STATUS</b>
American Bittern	<i>Botaurus lentiginosus</i>	Wetlands	Mig. Summer Breeder	SOC
American White Pelican	<i>Pelecanus erythrorhynchos</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder	SOC
Black Rosy-Finch	<i>Leucosticte atrata</i>	Alpine	Resident Year Round	SOC
Black Tern	<i>Chlidonias niger</i>	Wetlands	Mig. Summer Breeder	SOC
Black-backed Woodpecker	<i>Picoides arcticus</i>	Conifer forest burns	Resident Year Round	SOC
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Riparian forest	Mig. Summer Breeder	SOC
Black-necked Stilt	<i>Himantopus mexicanus</i>	Wetlands	Mig. Summer Breeder	SOC
Bobolink	<i>Dolichonyx oryzivorus</i>	Moist grasslands	Mig. Summer Breeder	SOC
Brewer's Sparrow	<i>Spizella breweri</i>	Sagebrush	Mig. Summer Breeder	SOC
Burrowing Owl	<i>Athene cunicularia</i>	Grasslands	Mig. Summer Breeder	SOC
Caspian Tern	<i>Hydroprogne caspia</i>	Large rivers, lakes	Mig. Summer Breeder	SOC
Cassin's Finch	<i>Haemorhous cassinii</i>	Drier conifer forest	Resident Year Round	SOC
Clark's Grebe	<i>Aechmophorus clarkii</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder	SOC
Common Loon	<i>Gavia immer</i>	Mountain lakes w/ emergent veg	Mig. Summer Breeder	SOC
Common Tern	<i>Sterna hirundo</i>	Large rivers, lakes	Mig. Summer Breeder	SOC
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Conifer forest	Resident Year Round	SOC
Flammulated Owl	<i>Psiloscoops flammeolus</i>	Dry conifer forest	Mig. Summer Breeder	SOC
Forster's Tern	<i>Sterna forsteri</i>	Wetlands	Mig. Summer Breeder	SOC
Great Gray Owl	<i>Strix nebulosa</i>	Conifer forest near open meadows	Resident Year Round	SOC
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	Sagebrush	Resident Year Round	SOC
Green-tailed Towhee	<i>Pipilo chlorurus</i>	Shrub woodland	Mig. Summer Breeder	SOC
Harlequin Duck	<i>Histrionicus histrionicus</i>	Mountain streams	Mig. Summer Breeder	SOC
Horned Grebe	<i>Podiceps auritus</i>	Wetlands	Mig. Summer Breeder	SOC
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Shrubland	Mig. Summer Breeder	SOC
Mountain Plover	<i>Charadrius montanus</i>	Grasslands	Mig. Summer Breeder	SOC
Northern Hawk Owl	<i>Surnia ulula</i>	Conifer forest	Resident Year Round	SOC
Pacific Wren	<i>Troglodytes pacificus</i>	Moist conifer forests	Resident Year Round	SOC
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	Open conifer forest	Resident Year Round	SOC



BIRDS – Potentially Present, Species of Concern, Potential Species of Concern, and Species of Special Status (continued)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>	<b>MT STATUS</b>
Sage Thrasher	<i>Oreoscoptes montanus</i>	Sagebrush	Mig. Summer Breeder	SOC
Sagebrush Sparrow	<i>Artemisiospiza nevadensis</i>	Sagebrush	Mig. Rare Summer Breeder	SOC
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	Shrub grassland	Resident Year Round	SOC
Sprague's Pipit	<i>Anthus spragueii</i>	Grasslands	Mig. Summer Breeder	SOC
Varied Thrush	<i>Ixoreus naevius</i>	Moist conifer forests	Mig. Summer Breeder	SOC
Veery	<i>Catharus fuscescens</i>	Riparian forest	Mig. Summer Breeder	SOC
White-faced Ibis	<i>Plegadis chihi</i>	Wetlands	Mig. Summer Breeder	SOC
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Prairie riparian forest	Mig. Rare Summer Breeder	SOC
Barrow's Goldeneye	<i>Bucephala islandica</i>	Mountain Lakes and Wetlands	Resident Year Round	PSOC
Boreal Owl	<i>Aegolius funereus</i>	Conifer forest	Resident Year Round	PSOC
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	Montane shrublands / woodlands	Mig. Summer Breeder	PSOC
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	Shrub grassland	Mig. Summer Breeder	PSOC
Rufous Hummingbird	<i>Selasphorus rufus</i>	Riparian shrub	Mig. Summer Breeder	PSOC
Short-eared Owl	<i>Asio flammeus</i>	Grasslands	Resident Year Round	PSOC
Tennessee Warbler	<i>Oreothlypis peregrina</i>	Forest wetland	Mig. Summer Breeder	PSOC
Western Screech-Owl	<i>Megascops kennicottii</i>	Riparian forest	Resident Year Round	PSOC

BIRDS – Potentially present, no special status

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>
American Avocet	<i>Recurvirostra americana</i>	Wetlands	Mig. Summer Breeder
American Coot	<i>Fulica americana</i>	Wetlands	Resident Year Round
American Golden-Plover	<i>Pluvialis dominica</i>	Wetland margin	Uncommon Migrant
American Redstart	<i>Setophaga ruticilla</i>	Riparian forest	Mig. Summer Breeder
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	Conifer forest burns	Resident Year Round
American Wigeon	<i>Mareca americana</i>	Lakes / open wetland	Resident Year Round
Baird's Sandpiper	<i>Calidris bairdii</i>	Wetland margin	Common Migrant
Bank Swallow	<i>Riparia riparia</i>	Riparian/stream banks	Mig. Summer Breeder
Barn Owl	<i>Tyto alba</i>	Sagebrush grassland	Resident Year Round
Barred Owl	<i>Strix varia</i>	Conifer forest	Resident Year Round
Black-bellied Plover	<i>Pluvialis squatarola</i>	River & lake, margins	Common Migrant
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	Riparian forest	Mig. Summer Breeder
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	Riparian forest	Mig. Summer Breeder
Blackpoll Warbler	<i>Setophaga striata</i>	Riparian shrub	Common Migrant
Blue Jay	<i>Cyanocitta cristata</i>	Mixed forest	Resident Year Round
Blue-winged Teal	<i>Spatula discors</i>	Wetlands	Mig. Summer Breeder
Bohemian Waxwing	<i>Bombycilla garrulus</i>	Open conifer forest	Mig. Summer Breeder
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	Lakes, ponds, reservoirs	Common Migrant
Broad-winged Hawk	<i>Buteo platypterus</i>	Riparian forest	Uncommon Migrant
Brown-headed Cowbird	<i>Molothrus ater</i>	Grasslands	Mig. Summer Breeder
Bufflehead	<i>Bucephala albeola</i>	Wetlands	Resident Year Round
Bullock's Oriole	<i>Icterus bullockii</i>	Riparian forest	Mig. Summer Breeder
California Gull	<i>Larus californicus</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder
Calliope Hummingbird	<i>Selasphorus calliope</i>	Conifer forest	Mig. Summer Breeder
Canada Jay	<i>Perisoreus canadensis</i>	Conifer forest	Resident Year Round
Canvasback	<i>Aythya valisineria</i>	Wetlands	Mig. Summer Breeder
Canyon Wren	<i>Catherpes mexicanus</i>	Cliffs / canyons	Resident Year Round
Cape May Warbler	<i>Setophaga tigrina</i>	Conifer forest	Uncommon Migrant
Cassin's Vireo	<i>Vireo cassinii</i>	Conifer forest	Mig. Summer Breeder
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	Deciduous shrub	Uncommon Migrant
Chipping Sparrow	<i>Spizella passerina</i>	Conifer forest	Mig. Summer Breeder
Cinnamon Teal	<i>Spatula cyanoptera</i>	Wetlands	Mig. Summer Breeder
Clay-colored Sparrow	<i>Spizella pallida</i>	Shrubland, riparian edge	Mig. Summer Breeder
Common Goldeneye	<i>Bucephala clangula</i>	Wetlands	Resident Year Round
Common Grackle	<i>Quiscalus quiscula</i>	Open forest	Mig. Summer Breeder
Common Yellowthroat	<i>Geothlypis trichas</i>	Riparian shrub	Mig. Summer Breeder
Cooper's Hawk	<i>Accipiter cooperii</i>	Forest	Resident Year Round
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	Riparian forest	Mig. Summer Breeder
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Wetlands	Mig. Summer Breeder
Dunlin	<i>Calidris alpina</i>	Wetland margin	Uncommon Migrant

BIRDS – Potentially present, no special status (continued)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>
Dusky Flycatcher	<i>Empidonax oberholseri</i>	Shrubland	Mig. Summer Breeder
Dusky Grouse	<i>Dendragapus obscurus</i>	Dry conifer forest	Resident Year Round
Eared Grebe	<i>Podiceps nigricollis</i>	Wetlands	Mig. Summer Breeder
Eurasian Wigeon	<i>Mareca penelope</i>	Wetlands	Uncommon Migrant
Fox Sparrow	<i>Passerella iliaca</i>	Forest shrub	Mig. Summer Breeder
Gadwall	<i>Mareca strepera</i>	Wetlands	Resident Year Round
Glaucous Gull	<i>Larus hyperboreus</i>	Lakes, ponds, reservoirs	Uncommon Migrant
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Moist conifer forests	Resident Year Round
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Grasslands	Mig. Summer Breeder
Gray Flycatcher	<i>Empidonax wrightii</i>	Sagebrush	Mig. Summer Breeder
Greater Scaup	<i>Aythya marila</i>	Lakes / open water wetland	Mig. Summer Breeder
Greater White-fronted Goose	<i>Anser albifrons</i>	Wetlands	Common Migrant
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Wetlands	Common Migrant
Gyr Falcon	<i>Falco rusticolus</i>	Open habitat / generalist	Mig. Summer Breeder
Hammond's Flycatcher	<i>Empidonax hammondi</i>	Riparian conifer forest	Mig. Summer Breeder
Harris's Sparrow	<i>Zonotrichia querula</i>	Conifer shrub	Common Migrant
Hermit Thrush	<i>Catharus guttatus</i>	Conifer forest	Mig. Summer Breeder
Herring Gull	<i>Larus argentatus</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder
Hoary Redpoll	<i>Acanthis hornemanni</i>	Open woodland and shrub	Mig. Summer Breeder
Indigo Bunting	<i>Passerina cyanea</i>	Deciduous shrub	Rare Migrant
Lapland Longspur	<i>Calcarius lapponicus</i>	Open fields	Mig. Summer Breeder
Lark Bunting	<i>Calamospiza melanocorys</i>	Sagebrush grassland	Mig. Summer Breeder
Lark Sparrow	<i>Chondestes grammacus</i>	Grasslands	Mig. Summer Breeder
Lazuli Bunting	<i>Passerina amoena</i>	Riparian shrub	Mig. Summer Breeder
Least Sandpiper	<i>Calidris minutilla</i>	Wetland margin	Common Migrant
Lesser Yellowlegs	<i>Tringa flavipes</i>	Wetlands	Common Migrant
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	Wetland margin	Common Migrant
Long-eared Owl	<i>Asio otus</i>	Open woodland / wood draws	Resident Year Round
Long-tailed Duck	<i>Clangula hyemalis</i>	Reservoirs, lakes, large rivers	Uncommon Migrant
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	Shrub woodland	Mig. Summer Breeder
Magnolia Warbler	<i>Setophaga magnolia</i>	Conifer forest	Uncommon Migrant
Marbled Godwit	<i>Limosa fedoa</i>	Grasslands	Mig. Summer Breeder
Marsh Wren	<i>Cistothorus palustris</i>	Wetlands	Mig. Summer Breeder
Merlin	<i>Falco columbarius</i>	Forest	Resident Year Round
Mew Gull	<i>Larus canus</i>	Lakes, ponds, reservoirs	Uncommon Migrant
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	Mixed forest / shrubland	Mig. Summer Breeder
N. Flicker (Red-shafted)	<i>Colaptes auratus cafer</i>	Mixed forest	Resident Year Round
N. Flicker (Yellow-shafted)	<i>Colaptes auratus auratus</i>	Mixed forest	Resident Year Round
Northern Mockingbird	<i>Mimus polyglottos</i>	Generalist	Mig. Rare Summer Breeder
Northern Pintail	<i>Anas acuta</i>	Ponds / Wetland	Resident Year Round

BIRDS – Potentially present, no special status (continued)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	Conifer forest	Resident Year Round
N. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Open habitat / generalist	Mig. Summer Breeder
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Conifer forest	Resident Year Round
Northern Shoveler	<i>Spatula clypeata</i>	Wetlands	Mig. Summer Breeder
Northern Shrike	<i>Lanius borealis</i>	Open shrubland	Mig. Summer Breeder
Northern Waterthrush	<i>Parkesia noveboracensis</i>	Forest wetland	Mig. Summer Breeder
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Early seral forest / shrub	Mig. Summer Breeder
Pacific Loon	<i>Gavia pacifica</i>	Lakes, ponds, reservoirs	Uncommon Migrant
Palm Warbler	<i>Setophaga palmarum</i>	Forest wetland	Uncommon Migrant
Pectoral Sandpiper	<i>Calidris melanotos</i>	Wetland margin	Common Migrant
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Wetlands	Resident Year Round
Pine Grosbeak	<i>Pinicola enucleator</i>	Conifer forest	Resident Year Round
Purple Finch	<i>Haemorhous purpureus</i>	Conifer forest	Uncommon Migrant
Purple Martin	<i>Progne subis</i>	Open grasslands	Mig. Rare Summer Breeder
Pygmy Nuthatch	<i>Sitta pygmaea</i>	Conifer forest	Resident Year Round
Red Crossbill	<i>Loxia curvirostra</i>	Conifer forest	Resident Year Round
Red-breasted Merganser	<i>Mergus serrator</i>	Montane rivers	Common Migrant
Red-eyed Vireo	<i>Vireo olivaceus</i>	Riparian forest	Mig. Summer Breeder
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	Mixed conifer forests	Mig. Summer Breeder
Red-necked Grebe	<i>Podiceps grisegena</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder
Red-necked Phalarope	<i>Phalaropus lobatus</i>	Lakes, ponds, reservoirs	Common Migrant
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Wetlands	Resident Year Round
Rock Wren	<i>Salpinctes obsoletus</i>	Rocky habitat	Mig. Summer Breeder
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Deciduous forest	Common Migrant
Ross's Goose	<i>Anser rossii</i>	Wetlands	Common Migrant
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Conifer forest	Mig. Summer Breeder
Ruddy Duck	<i>Oxyura jamaicensis</i>	Wetlands	Mig. Summer Breeder
Rusty Blackbird	<i>Euphagus carolinus</i>	Woody wetlands	Uncommon Migrant
Sanderling	<i>Calidris alba</i>	Wetland margin	Common Migrant
Say's Phoebe	<i>Sayornis saya</i>	Shrub grassland, rock outcrop	Mig. Summer Breeder
Semipalmated Plover	<i>Charadrius semipalmatus</i>	River, lake, and reservoir edge	Common Migrant
Semipalmated Sandpiper	<i>Calidris pusilla</i>	Wetland margin	Common Migrant
Snow Bunting	<i>Plectrophenax nivalis</i>	Open fields	Mig. Summer Breeder
Snow Goose	<i>Anser caerulescens</i>	Wetlands	Common Migrant
Snowy Egret	<i>Egretta thula</i>	Wetlands	Mig. Rare Summer Breeder
Snowy Owl	<i>Bubo scandiacus</i>	Open habitat / generalist	Mig. Summer Breeder
Solitary Sandpiper	<i>Tringa solitaria</i>	Wetlands	Common Migrant
Sora	<i>Porzana carolina</i>	Marsh	Mig. Summer Breeder
Spotted Towhee	<i>Pipilo maculatus</i>	Shrubland, riparian edge	Mig. Summer Breeder
Steller's Jay	<i>Cyanocitta stelleri</i>	Conifer forest	Resident Year Round



BIRDS – Potentially present, no special status (continued)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>	<b>Distribution</b>
Stilt Sandpiper	<i>Calidris himantopus</i>	Wetland margin	Common Migrant
Surf Scoter	<i>Melanitta perspicillata</i>	Reservoirs, lakes, large rivers	Uncommon Migrant
Swainson's Hawk	<i>Buteo swainsoni</i>	Sagebrush grassland	Mig. Summer Breeder
Townsend's Warbler	<i>Setophaga townsendi</i>	Moist conifer forests	Mig. Summer Breeder
Turkey Vulture	<i>Cathartes aura</i>	Open habitat / generalist	Mig. Summer Breeder
Upland Sandpiper	<i>Bartramia longicauda</i>	Grasslands	Mig. Summer Breeder
Violet-green Swallow	<i>Tachycineta thalassina</i>	Conifer forest	Mig. Summer Breeder
Virginia Rail	<i>Rallus limicola</i>	Wetlands	Mig. Summer Breeder
Western Bluebird	<i>Sialia mexicana</i>	Shrub woodland	Mig. Summer Breeder
Western Grebe	<i>Aechmophorus occidentalis</i>	Lakes, ponds, reservoirs	Mig. Summer Breeder
Western Kingbird	<i>Tyrannus verticalis</i>	Grasslands	Mig. Summer Breeder
Western Sandpiper	<i>Calidris mauri</i>	Wetland margin	Common Migrant
Western Tanager	<i>Piranga ludoviciana</i>	Conifer forest	Mig. Summer Breeder
Western Wood-Pewee	<i>Contopus sordidulus</i>	Mixed forest	Mig. Summer Breeder
Whimbrel	<i>Numenius phaeopus</i>	River, lake, and reservoir edge	Uncommon Migrant
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Forest	Resident Year Round
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	Forest shrub	Mig. Summer Breeder
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Conifer forest	Common Migrant
White-throated Swift	<i>Aeronautes saxatalis</i>	Cliffs / canyons	Mig. Summer Breeder
White-winged Crossbill	<i>Loxia leucoptera</i>	Conifer forest	Resident Year Round
White-winged Scoter	<i>Melanitta fusca</i>	Reservoirs, lakes, large rivers	Uncommon Migrant
Wild Turkey	<i>Meleagris gallopavo</i>	Open habitat / generalist	Resident Year Round
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	Moist conifer forests	Mig. Summer Breeder
Wilson's Phalarope	<i>Phalaropus tricolor</i>	Wetlands	Mig. Summer Breeder
Wood Duck	<i>Aix sponsa</i>	Wetlands	Resident Year Round
Yellow-breasted Chat	<i>Icteria virens</i>	Riparian shrub	Mig. Summer Breeder
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	Wetlands	Mig. Summer Breeder
Yellow-rumped Warbler	<i>Setophaga coronata</i>	Conifer forest	Mig. Summer Breeder

## Mammals

### MAMMALS – Observed Species of Concern, Potential Species of Concern, and Species of Special Status

Common Name	Scientific Name	Habitat	Distribution	MT Status
Grizzly Bear	<i>Ursus arctos</i>	Conifer forest	Resident Year Round	SOC
Hoary Bat	<i>Lasiurus cinereus</i>	Riparian and forest	Mig. Summer Breeder	SOC
Little Brown Myotis	<i>Myotis lucifugus</i>	Generalist	Resident Year Round	SOC
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Caves in forested habitats	Resident Year Round	SOC
Wolverine	<i>Gulo gulo</i>	Boreal Forest and Alpine Habitats	Resident Year Round	SOC
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Riparian and forest	Resident Year Round	PSOC
Wyoming Ground Squirrel	<i>Urocitellus elegans</i>	Sage grasslands / montane meadows	Resident Year Round	PSOC

### MAMMALS – Potentially Present Species of Concern, Potential Species of Concern, and Species of Special Status

Common Name	Scientific Name	Habitat	Distribution	MT Status
Canada Lynx	<i>Lynx canadensis</i>	Subalpine conifer forest	Resident Year Round	SOC
Dwarf Shrew	<i>Sorex nanus</i>	Rocky habitat	Resident Year Round	SOC
Fringed Myotis	<i>Myotis thysanodes</i>	Riparian and dry mixed conifer forest	Mig. Summer Breeder	SOC
Merriam's Shrew	<i>Sorex merriami</i>	Sagebrush grassland	Resident Year Round	SOC
Preble's Shrew	<i>Sorex preblei</i>	Sagebrush grassland	Resident Year Round	SOC
Spotted Bat	<i>Euderma maculatum</i>	Cliffs with rock crevices	Mig. Summer Breeder	SOC
Idaho Pocket Gopher	<i>Thomomys idahoensis</i>	Open habitat / generalist	Resident Year Round	PSOC
Porcupine	<i>Erethizon dorsatum</i>	Mixed forest	Resident Year Round	PSOC
Uinta Ground Squirrel	<i>Urocitellus armatus</i>	Open grassy edges	Resident Year Round	PSOC
Water Vole	<i>Microtus richardsoni</i>	Alpine and subalpine aquatic habitats	Resident Year Round	PSOC
Western Spotted Skunk	<i>Spilogale gracilis</i>	Riparian shrub	Resident Year Round	PSOC

MAMMALS – Observed, no special status (distribution for all = year-round resident)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>
Big Brown Bat	<i>Eptesicus fuscus</i>	Generalist
Black Bear	<i>Ursus americanus</i>	Conifer forest
Bobcat	<i>Lynx rufus</i>	Generalist
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>	Generalist
California Myotis	<i>Myotis californicus</i>	Mature forest
Deer Mouse	<i>Peromyscus maniculatus</i>	Generalist
Elk	<i>Cervus canadensis</i>	Generalist
Gray Wolf	<i>Canis lupus</i>	Generalist
Long-eared Myotis	<i>Myotis evotis</i>	Forest
Long-legged Myotis	<i>Myotis volans</i>	Conifer forest
Masked Shrew	<i>Sorex cinereus</i>	Generalist
Montane Vole	<i>Microtus montanus</i>	Mountain generalist
Moose	<i>Alces americanus</i>	Willow riparian, early successional forest
Mountain Cottontail	<i>Sylvilagus nuttallii</i>	Sagebrush, willow, riparian
Mountain Goat	<i>Oreamnos americanus</i>	Mountain peaks
Mountain Lion	<i>Puma concolor</i>	Forest
Mule Deer	<i>Odocoileus hemionus</i>	Montane shrublands / woodlands
Northern River Otter	<i>Lontra canadensis</i>	Streams, riparian forest
Pronghorn	<i>Antilocapra americana</i>	Grasslands
Red Fox	<i>Vulpes vulpes</i>	Generalist
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Forest
Striped Skunk	<i>Mephitis mephitis</i>	Open habitat / generalist
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	Mixed forest
White-tailed Deer	<i>Odocoileus virginianus</i>	Generalist
White-tailed Jack Rabbit	<i>Lepus townsendii</i>	Grasslands
Yellow-bellied Marmot	<i>Marmota flaviventris</i>	Talus slopes / rock outcrops

MAMMALS – Potentially present, no special status (distribution for all = year-round resident)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat</b>
American Mink	<i>Mustela vison</i>	Riparian forest
Badger	<i>Taxidea taxus</i>	Sagebrush grassland
Beaver	<i>Castor canadensis</i>	Streams, lakes, ponds
Bighorn Sheep	<i>Ovis canadensis</i>	Rocky montane
Columbian Ground Squirrel	<i>Urocitellus columbianus</i>	Valley to alpine meadows
Coyote	<i>Canis latrans</i>	Generalist
Dusky or Montane Shrew	<i>Sorex monticolus</i>	Montane
Golden-mantled Ground Squirrel	<i>Callospermophilus lateralis</i>	Open conifer forest / alpine slopes
Heather Vole	<i>Phenacomys intermedius</i>	Open conifer forest
Least Chipmunk	<i>Tamias minimus</i>	Alpine tundra
Least Weasel	<i>Mustela nivalis</i>	Open forest
Long-tailed Vole	<i>Microtus longicaudus</i>	Generalist
Long-tailed Weasel	<i>Mustela frenata</i>	Open habitat / generalist
Marten	<i>Martes americana</i>	Moist conifer forests
Meadow Vole	<i>Microtus pennsylvanicus</i>	Wet meadows
Muskrat	<i>Ondatra zibethicus</i>	Streams, lakes, ponds
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	Conifer forest
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>	Sagebrush grassland
Northern Pocket Gopher	<i>Thomomys talpoides</i>	Open habitat / generalist
Pika	<i>Ochotona princeps</i>	Montane talus
Raccoon	<i>Procyon lotor</i>	Generalist
Richardson's Ground Squirrel	<i>Urocitellus richardsonii</i>	Grasslands
Sagebrush Vole	<i>Lemmiscus curtatus</i>	Sagebrush
Short-tailed Weasel	<i>Mustela erminea</i>	Early to mid-successional forest
Snowshoe Hare	<i>Lepus americanus</i>	Conifer forest
Southern Red-backed Vole	<i>Myodes gapperi</i>	Moist mature forest
Vagrant Shrew	<i>Sorex vagrans</i>	Moist forest
Water Shrew	<i>Sorex palustris</i>	Mountain streams
Western Jumping Mouse	<i>Zapus princeps</i>	Generalist
Yellow-pine Chipmunk	<i>Tamias amoenus</i>	Dry conifer shrub



## Appendix C: Vegetation Trends/Monitoring Results

This appendix references a copy of a draft vegetation monitoring report prepared by Robert Harrington. This appendix will be updated when this report is finalized.

### **Bear Creek Wildlife Management Area**

#### **Vegetation Monitoring**



**Monitoring Details:** 3 monitoring sites, 9 transects, 6 site photo points, 90 Daubenmire quadrats, 90 photo plots, floristic survey & ecological site identification

**Data Collection Dates:** 1997, 2011 & 2012

**Location:** Madison County, Montana  
(approximately 11 miles south of Ennis and 4 miles east of Cameron, Montana)

**Size:** 3458 acres

**Elevation:** 6575 ft.

The area has been managed as a state wildlife area since the mid1950s. It provides for a variety of wildlife including elk, mule deer, black bears, grizzly bears, mountain lion, mountain grouse and other game and non-game species.

## **Rangeland Monitoring Findings & Recommendations:**

The vegetation resources on the Bear Creek WMA are stable and healthy. The area provides excellent wildlife habitat. Montana Fish Wildlife and Parks' current management scenario meets the needs of wildlife and the public and should continue.

The Bear Creek Wildlife Management Area (WMA) is dominated by native perennial grass, forb, mosses, lichen, sub-shrub and shrub communities. Idaho fescue, bluebunch wheatgrass, Sandburg bluegrass and silvery lupine dominant the landscape. Minor inclusions of Kentucky bluegrass occur and will persist. The forb community is dominated by silvery lupine and additional native perennial forbs. However, spotted knapweed is present and there is a weed management plan in place. Big sagebrush, silver sagebrush, gray horsebrush and green rabbitbrush largely make up the shrub community. Dense clubmoss occurs throughout the WMA. The soil surface is stable and vegetative litter has increased over time. The vegetation on the Bear Creek WMA is robust and healthy.

### **Site 1:**

Site 1, the Mill Creek site, was established in 1997. It is located on a 14"-19" precipitation zone on a droughty-steep ecological site and produces roughly 1800 lbs./acre. It is located on the northwest portion of the WMA. In 1997 it was dominated by Idaho fescue (31.8%). Additional grasses occurring in trace amounts were bluebunch wheatgrass, Kentucky bluegrass, Sandberg bluegrass, needleandthread, green needlegrass and prairie junegrass. The forb data were grouped together (10.6%). Forbs occurring included silvery lupine, cudweed sagewort, western yarrow, littleleaf pussytoes, cudweed sagewort, bastard toadflax, dotted gayfeather, phlox and mountain death camas. Silver sagebrush was 3.92% and green rabbitbrush and gray horsebrush occurred in trace amounts. Bare ground was 0.42% and litter was 7.92%.

In 2007 Site 1 was dominated by Idaho fescue (41.17%) and Kentucky bluegrass (10.5%) was secondary. Green needlegrass (3.5%) and bluebunch wheatgrass (1.67%) were tertiary. Additional grasses occurring in trace amounts were basin wildrye, prairie junegrass, Sandberg bluegrass and needleandthread. The forb community was diverse and dominated by silvery lupine (15.25%). Cudweed sagewort (4.17%) and western yarrow (1.67%) were secondary. Ballhead sandwort (1.08%) was tertiary. Trace amounts of western yarrow, littleleaf pussytoes, bastard toadflax, tapertip hawksbeard, little sunflower, dotted gayfeather, longleaf phlox and mountain death camas occurred. Fringed sagewort occurred in a trace amount. Silver sagebrush was 5.08% and trace amounts of green rabbitbrush and gray horsebrush occurred. Dense clubmoss was 7.75%, bare ground was 1.5% and litter was 85.58%.

In 2011 Site 1 was dominated by Idaho fescue (44.2%) and dense clubmoss (20.8%). The secondary grass was Kentucky bluegrass (14.5%). Tertiary grasses were bluebunch wheatgrass (2.8%) and needleleaf sedge (1.3%). Other grasses present in trace amounts were needleandthread and prairie junegrass. The forb community was dominated by lupine (8.2%) and cudweed sagewort (7.1%). Additional forbs included western yarrow, twin arnica, stiff yellow Indian paintbrush and western stoneseed. Big

sagebrush was 2.0%, green rabbitbrush was 1.5%, silver sagebrush was 1.1% and gray horsebrush was 1.0%. Dense clubmoss was 20.8%, litter was 70.4% and bare ground was 4.1%.

## **Site 2:**

Site 2, the Cameron Site, was also established in 1997. It is located on a 14"-19" precipitation zone on a droughty ecological site and produces roughly 1800 lbs./acre. It is located approximately ½ mile north of Site 1 in the northwest portion of the WMA. In 1997 it was dominated by Idaho fescue (31.2%) and bluebunch wheatgrass (3.8%) was the secondary grass. Other grass species occurring in trace amounts were prairie junegrass, green needlegrass, needleandthread and Kentucky bluegrass. The forb data were lumped together (22.5%) and was dominated by Silvery lupine. Additional forbs present were arrowleaf balsamroot, Indian paintbrush, bastard toadflax and phlox and spotted knapweed. Silver sagebrush was 3.0%, bare ground was 0.83% and litter was 7.5%.

In 2007 Site 2 was dominated by Idaho fescue (42.92%) and bluebunch wheatgrass (4.83%) was secondary. Additional grasses occurring in trace amounts were prairie junegrass, Sandberg bluegrass and needleandthread. The forb community was dominated by spotted knapweed (15.83%) and silvery lupine (13.83%). Secondary forbs included bastard toadflax (3.25%), western yarrow (2.83%), longleaf phlox (2.83%), dandelion (1.58%) and little sunflower (1.17%). Additional forbs present in trace amounts included prairie onion, Missouri milkvetch, mountainside Indian paintbrush, Cous biscuitroot and darkwoods violet. Silver sagebrush was 7.25%, green rabbitbrush was 1.5% and a trace amount of gray horsebrush occurred. Dense clubmoss was 11.83%, bare ground was 0.92% and litter was 66.42%.

In 2011 Site 2 was dominated by Idaho fescue (58.7%) and dense clubmoss (49.2%). The secondary grass was bluebunch wheatgrass (1.8%). Prairie junegrass, needleleaf sedge, Kentucky bluegrass, Sandberg bluegrass occurred in trace amounts. The forb community was dominated by Silvery lupine (3.9%) and bastard toadflax (3.0%). Additional forbs occurring in trace amounts were western yarrow, nodding onion, cudweed sagewort, stiff yellow Indian paintbrush and Bonneville shootingstar. Dense clubmoss was 49.2%, litter was 53.1% and bare ground was 2.5%.

## **Site 3:**

Site 3, the North Trailhead Site, was established in 1997. It is located on a 14"-19" precipitation zone on a loamy steep ecological site and produces roughly 1500 lbs./acre. It is located on the central portion of the WMA. In 1997 it was dominated by Idaho fescue (34.8%) and big sagebrush (9.8%). Bluebunch wheatgrass (2.1%) was secondary. Other grass data were grouped together (4.3%) and included needleandthread, Kentucky bluegrass, prairie junegrass, Sandberg bluegrass, basin wildrye and green needlegrass. The forb data were grouped (5.9%) and was dominated by lupine. Additional forbs occurring in trace amounts were western yarrow, cudweed sagewort, littleleaf pussytoes, dandelion,

arrowleaf balsamroot and Hoods phlox. Big sagebrush was 9.8% and silver sagebrush was 1.7%. Bare ground was 1.58% and litter was 11.25%.

In 2007 Site 3 was dominated by Idaho fescue (27.25%). Kentucky bluegrass was secondary (14.08%) and bluebunch wheatgrass (4.58%) was tertiary. Additional grasses occurring in trace amounts were cheatgrass brome, sedge, orchardgrass, basin wildrye and needleandthread. The forb community was diverse and dominated by silvery lupine (14.83%). Western yarrow (7.58%) was secondary and littleleaf pussytoes (2.83%), little sunflower (2.08%), arrowleaf balsamroot (1.75%), ballhead sandwort (1.17%) and western stoneseed (1.08%) were tertiary. Additional forbs occurring in trace amounts included prairie onion, bastard toadflax, common gaillardia, penstemon, Hoods phlox, longleaf dandelion, darkwoods violet and mountain death camas. Big sagebrush was 15.17%, silver sagebrush was 4.25%, green rabbitbrush was 2.0% and gray horsebrush was 1.58%. Dense clubmoss was 1.33%, bare ground was 5.58% and litter was 71.0%.

In 2011 Site 3 was dominated by Idaho fescue (29.6%), Kentucky bluegrass (15.5%) and big sagebrush (11.9%). The secondary grass was bluebunch wheatgrass (3.1%) and timothy (1.5%) was tertiary. Additional grasses present in trace amounts were needleandthread and prairie junegrass. The forb community was dominated by lupine (%15.7) and western yarrow (%6.1). Other forbs occurring in trace amounts were nodding onion, rosy pussytoes, dandelion, ballhead sandwort, twin arnica, cudweed sagewort, arrowleaf balsamroot and western salsify. Big sagebrush was 11.9%, green rabbitbrush was 1.7%, gray horsebrush was 0.3% and a trace amount of silver sagebrush occurred. Bare ground was 7.0% and litter was 72.4%.

## Appendix D: Infrastructure



Figure 10: Mill Creek Access to Bear Creek WMA with letters indicating 2018 infrastructure as detailed below.



#### A: Mill Creek Access Road and Bear Loop County Road

MFWP's right of easement begins at point A (Figure 10) with a cattle guard and 2 signs noting this is an access road to Bear Creek WMA, the dates the WMA is open or closed, and an acknowledgment the next mile is through private land by public easement. Starting at this point, the road becomes the responsibility of MFWP. For most of the winter closure period, MFWP uses a chain and lock to close this road. The local landowner also holds a lock on this gate so he/she can access their properties during winter. As parking is forbidden along the county road, MFWP opens this gate starting early May to allow the public closer parking (see point B) before the opening date when antler hunters gather. By May 15, twenty cars or more may gather along this road to access the WMA.



*Figure 11: Cattle guard, access to Bear Creek WMA sign, sign acknowledging road easement across private land where the Mill Creek Access Road meets Bear Loop County Road.*



### B: Mill Creek Road: Intermediate Closure and Signing Location

This cattle guard marks another closure location. Point B (Figure 10) on the map, a closure here allows antler hunters to park along the MFWP road easement. The private landowners also have access to this road for their agricultural use year-round.



*Figure 12: The second gate along Mill Creek Access Road with two signs acknowledging Bear Creek WMA lies ahead and that access is through a public easement across private land.*

### C: Entrance to Bear Creek WMA Mill Creek Portion

The entrance to Bear Creek WMA along the Mill Creek Access Road at point C (Figure 10) is signed with hanging fence tags noting our property boundary as well as larger signs noting closure periods (Figure 13). There is opportunity to improve signage at this location, perhaps to consider a large wood WMA sign. There is a small pullout in the grass on the north east side of this cattle guard which provides a parking area. Antler hunters frequently park here and walk uphill. It is a dry site, and at this time, we see no need to improve or create an official parking area at this location.

Between points C and D (Figure 10), the western property boundary between Bear Creek WMA and private land, the responsibility for fence management is MFWP's. This fence is in poor repair and shows evidence of wildlife entanglement.



*Figure 13: Signs at the third gate along the Mill Creek Access Road, the entrance to Bear Creek WMA.*



### D: Mill Creek Trailhead

USFS Trail #6323, the Mill Creek Trail, begins at Point D (Figure 10). The parking area is rustic with a gravel, dirt, and grass substrate. Signs at this location area mainly come from the USFS and MFWP's grizzly bear team, informing hunters of grizzly bears in the area (Figure 14). The road structure is up-and-back from the parking area, but visitors have been pioneering a loop. They have been driving off-road and have created this loop so that trailers do not have to turn around but can drive through. The loop does have some drainage issues and is beginning to widen as drivers avoid ruts. There is opportunity and need to improve this area.



Figure 14: Mill Creek Trailhead area signage



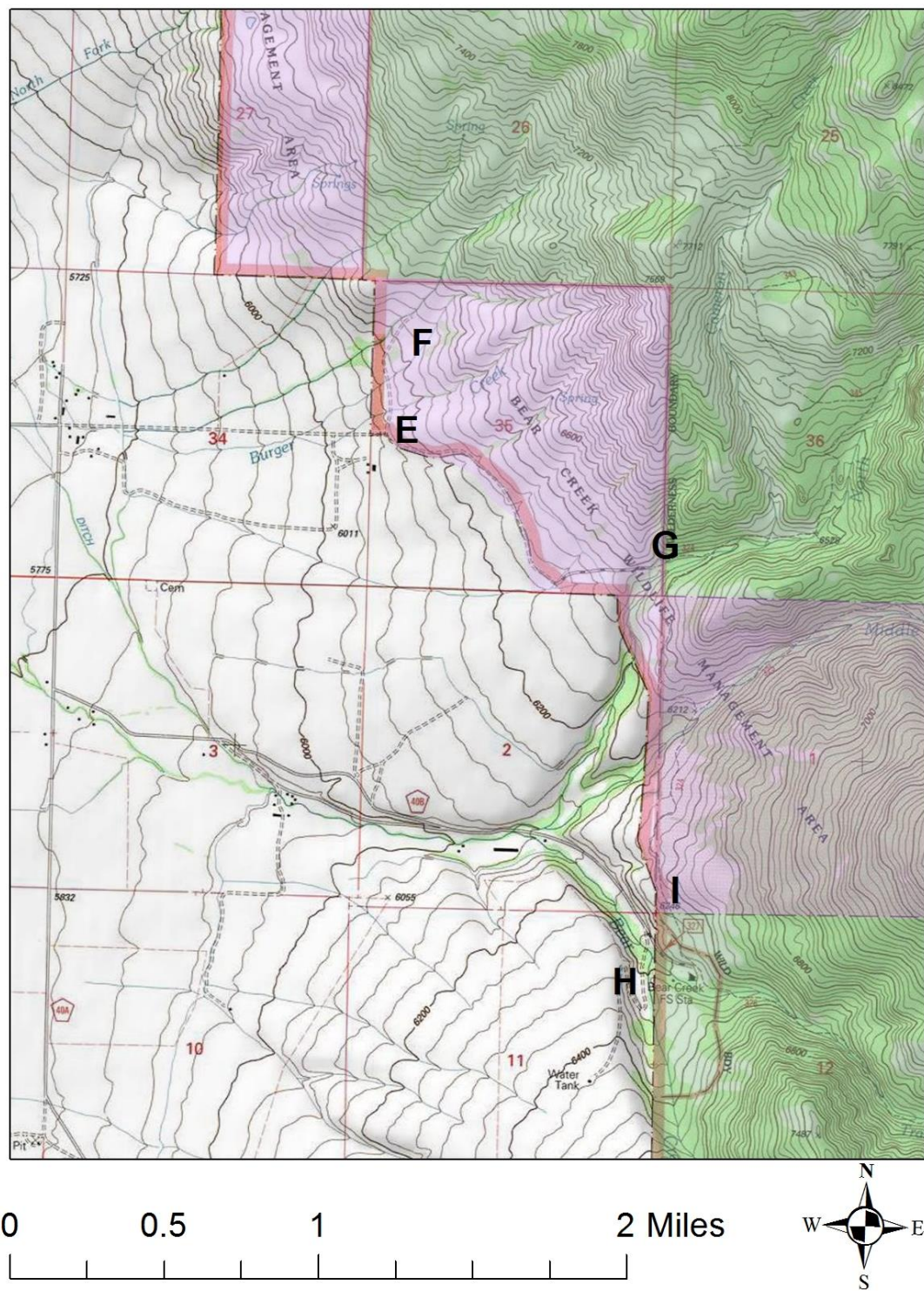


Figure 15: South portion of Bear Creek WMA with letters indicating 2018 infrastructure as detailed below.

#### E: Entrance to Bear Creek WMA at Burger Creek

The road junction at point E (Figure 15) represents the entrance to Bear Creek WMA at Burger Creek. During the closure period, a WMA signboard rests at Bear Creek Angus headquarters along the west side of Section 34 (Figure 16, bottom). We place the sign here to deter people from driving up the road as there is no legal turnaround at the WMA border. The entrance to the WMA at this location has a nice, new wood sign and no changes are needed (Figure 16, top).



*Figure 16: Signboard at Burger Creek entrance to Bear Creek WMA (top) and signboard designating closure at the Bear Creek Angus headquarters 1 mile to the east (bottom).*



## F: Burger Creek Parking Area

The left road junction along the Burger Creek Access Area leads to a dry, grassy parking area with few signs (point F; Figure 15 and Figure 17). Existing signs note no motorized vehicles beyond this point, and then bear aware signs. The “no motorized vehicles” sign may need to be replaced soon due to damage from bullet holes.



*Figure 17: Burger Creek parking area on Bear Creek WMA.*



## G: North Fork Trailhead

The USFS maintains a trailhead sign at point G (Figure 15, Figure 18). The parking area is low grass with compacted natural dirt and rock substrate. A collaborative Greater Yellowstone Coordinating Committee sign regarding invasive weeds, complete with a boot brush, also exists at this trailhead. Knapweed is prevalent at the USFS and WMA interface.

The main infrastructure need lies along the road between point E and G. Spring washouts have occurred in past years, including this 2018 spring, resulting in dangerous conditions to smaller vehicles. Although the WMA maintenance crews patched it to be passable this year, a full repair must be completed through contract services. There is a need to redo this road, blade and grade it properly, and add drainage features. There is also a need to work with adjacent landowners, as the nozzle end on an adjacent pivot line can cause additional damage from flow of irrigation water.



*Figure 18: USFS Trailhead sign on Bear Creek WMA at the North Fork trail.*

#### H: Main Bear Creek Trailhead (USFS)

On the USFS property to the south of the WMA is the main Bear Creek trailhead and campground. The area has water, corrals, a stock ramp, camping, parking, and a rental cabin (point H, Figure 15). This trailhead has just 2 WMA signs related to the closure, but no map indicating where WMA lands are (Figure 19). This is an area for potential improvement, especially as trail # 6325 leads straight into WMA section 1 with no further indication one is entering WMA lands (see point I, below).



*Figure 19: Bear awareness and WMA closure signs at trail #6325 leaving Bear Creek Trailhead (top) and main USFS trailhead sign at Bear Creek Trailhead along trail #6326, the Trail Fork (bottom).*



### I: Entrance to Bear Creek WMA along USFS Trail #6325

A hiker entering Bear Creek WMA from Bear Creek Trailhead would be greeted by this sign Point I (Figure 15; Figure 20). This sign is confusing as it says: “Lee Metcalf Wilderness”, but then our sign below notes “This Wildlife Management Area is CLOSED from Midnight, December 1<sup>st</sup> to Noon, May 15<sup>th</sup>”. MFWP is working with the USFS to relocate their sign to the true wilderness boundary of Section 1 along the Middle Fork Trail # 6325 to prevent hunter/hiker confusion.



*Figure 20: Signboard at entrance to Bear Creek WMA along USFS trail #6325 from Bear Creek Trailhead.*